

AUTOMOTIVE INDUSTRIES

LAND AIR WATER

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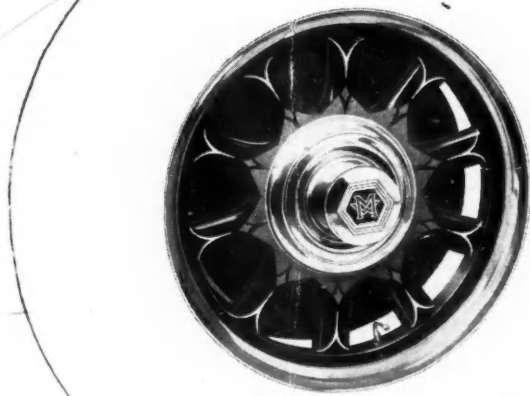
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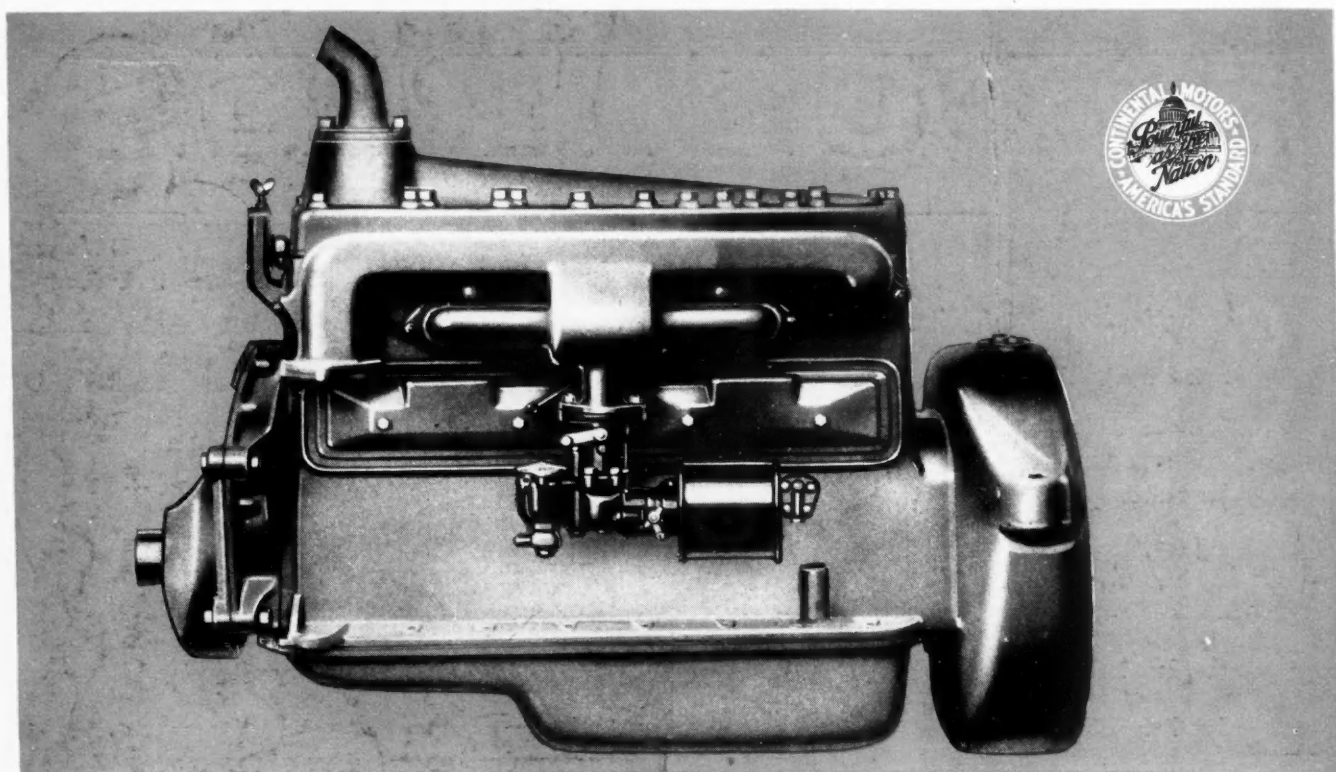
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AUTOMOTIVE INDUSTRIES

The **AUTOMOBILE**

Vol. 64 No. 12
Reg. U. S. Pat. Off.

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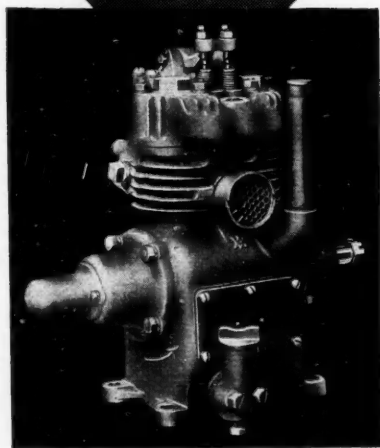
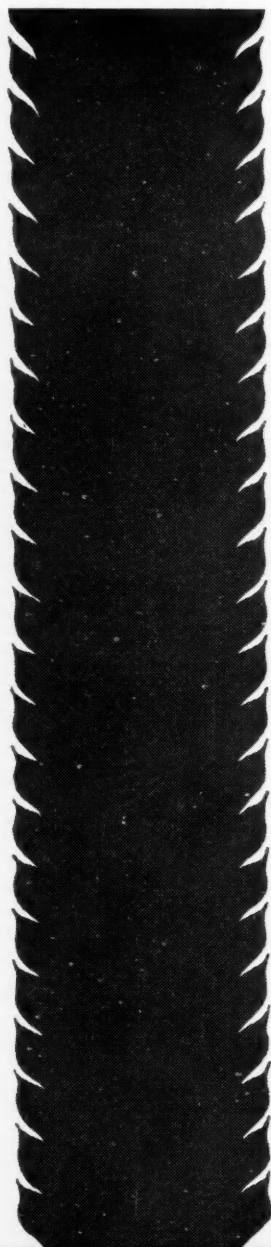
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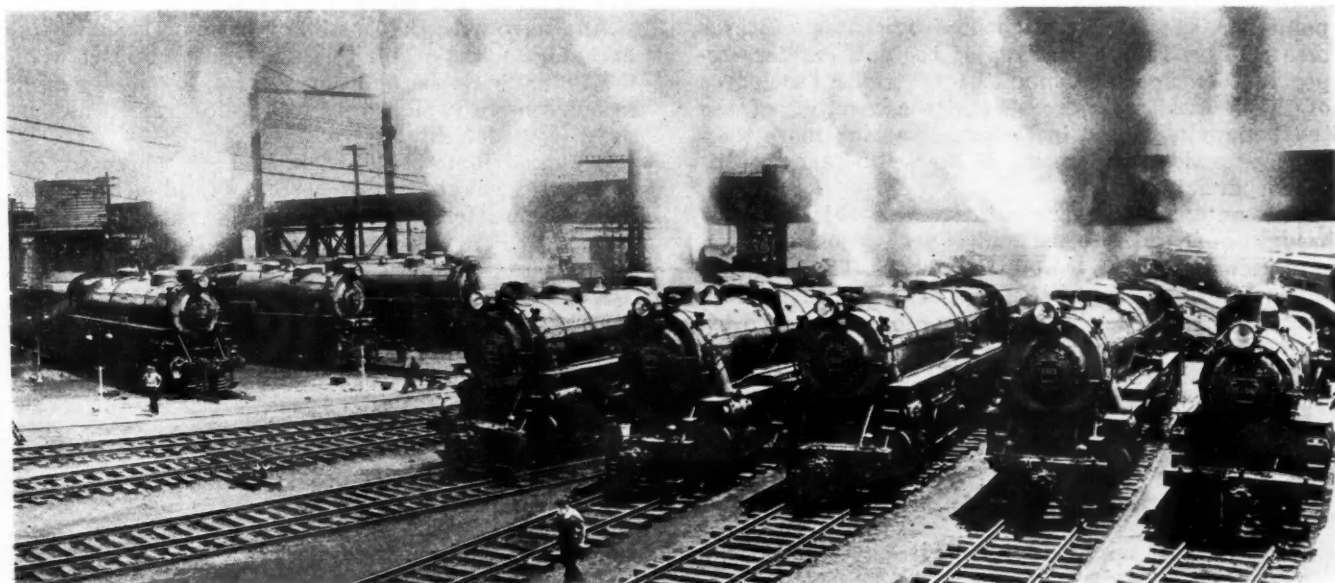
Automotive Industries

AUTOMOTIVE INDUSTRIES

VOLUME 64

MARCH 21, 1931

NUMBER 12



Pennsylvania R. R. Photo.

Railroads Cut Rates Up to 50% To Meet Driveaway Competition

By Norman G. Shidle and G. Lloyd Wilson*

FREIGHT-RATE reductions on complete motor vehicles and chassis, large enough to mean a saving of many millions of dollars a year, are in the process of being made by the railroads throughout the country.

Since these rates are made and published through seven separate territorial traffic bureaus, the exact amount of the savings can only be guessed at, but that they will be vast and far-reaching is already certain.

This huge saving, which eventually will accrue to the public in the form of lower delivered prices on automobiles, is being brought about by a movement started more than a year ago through studies of the Traffic Managers Conference of the N. A. C. C.; developed in cooperation with the National Automobile Chamber of Commerce, which is represented in this work by its assistant general manager and traffic expert, J. S. Marvin; and brought to first fruition with the publication of rate reductions ranging up to 50 per cent on cars, trucks and chassis to become effective on April 10, 1931, in Central Freight Association territory. (See map on next page.)

So detailed and so technical have been and are the processes through which such important rate changes are brought about that the full dramatic and economic significance of these drastic revisions tends to be lost to all except the traffic experts and the railroad tariff specialists.

Yet, out of the welter of negotiations and conferences; out of the staggering masses of figures and data which confront the neophyte trying to understand the portent of this current rate upheaval, there finally emerges a running story of vivid change, of interplay between powerful and fundamental economic forces and of intense significance and interest to every automotive executive, whether he ever heard of the technically complicated Rule 34 or not.

The tale, whose early climax is foreshadowed by the rate reductions in limited areas, definitely announced two weeks ago, began to unfold itself early in 1930 when negotiations were initiated, as previously mentioned, by a special committee of traffic managers representing motor vehicle builders.

This special committee was headed by E. N. Hodges of Hupp and had as its members J. H. Myler

*Professor of Commerce and Transportation, University of Pennsylvania

of Chrysler, F. A. Allen of Hudson, E. D. Grinnell of Buick, C. R. Scharff of Chevrolet, and G. M. Sherman of Studebaker. Its plans were worked out and developed in cooperation with the N. A. C. C. Actively aiding Mr. Marvin in the Chambers' phase of the work was Kenneth A. Moore, who is the N. A. C. C. representative in its Detroit office.

The railroads, on their part, removing the negotiations from routine traffic department channels, appointed a special investigating committee of three men. These representatives of the rail carriers reported to a special committee of traffic executives of the Eastern carriers. Finally a meeting of the two groups was held in Detroit in which more than 20 vice-presidents in charge of traffic of Eastern railroads participated.

The automotive representatives at this meeting brought out vital information regarding cost of truck operations, driveaways and truckaways. They pointed out that if any considerable proportion of this driveaway and truckaway business was to be regained by the railroads, substantially lower rates would be necessary on automobiles, trucks and chassis in straight or mixed carloads.

Further negotiations followed, culminating with the public announcement early in March of the new reduced commodity rates in C. F. A. territory and change in classification of automobiles from 110 to 100 per cent of first class throughout Official classification territory—two specific moves which unquestionably are the forerunners of somewhat similar rate-reduction action throughout practically the entire United States.

And now, with the results of these active although backstage negotiations bursting into public view for the industry to see and understand, the story begins to move more rapidly and to develop varied and interesting sidelights.

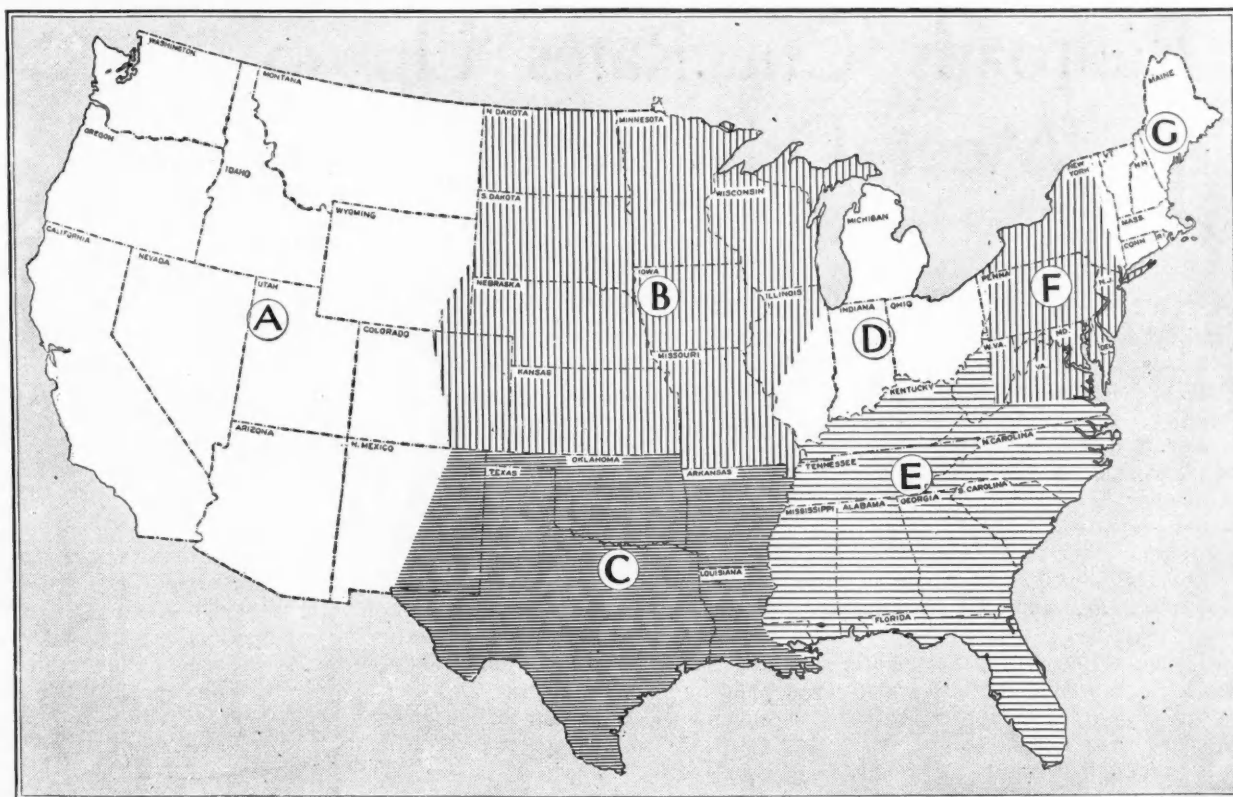
Let's see just what has happened; where we are now, and what the future seems to hold on this rate-reduction matter. "Now here's the simple facts."

On April 10 specific commodity rate reductions ranging up as high as 50 per cent will become effective on motor vehicles shipped between points within Central Freight Association territory and from points in this territory to points in adjacent states of Wisconsin, Minnesota, Iowa and the Upper Peninsula of Michigan. (Part of these areas is in Western

Map I—Major Railroad Freight Rate Adjustment Territories

Here are the approximate boundaries of the seven major freight rate adjustment territories.

A more technical and detailed map would show a slight overlapping of territories in a few instances and would indicate division of the Transcontinental Freight Bureau territory into two divisions which function only in connection with shipments within that territory.



	REGISTRATIONS		SALES			
	Pass. Cars	Com. Vehicles	Pass. Cars	Com. Vehicles	Truck Dealers	P. C. Dealers
A Transcontinental Freight Bureau territory....	3,331,341	211,544	329,227	54,467	3,445	5,591
B Western Trunk Line territory	4,127,903	607,911	460,433	72,943	7,469	11,963
C Southwestern Freight Bureau territory	2,079,341	352,903	226,940	38,700	2,445	3,811
D Central Freight Association territory	4,819,149	700,742	542,010	65,895	4,719	9,274
E Southern Freight Assn. territory	2,403,095	361,747	257,375	47,042	3,171	4,838
F Eastern Trunk Line Assn. territory	4,976,648	913,325	695,915	101,053	5,177	10,231
G New England Freight Assn. territory	1,477,227	237,777	206,100	30,200	1,462	3,045
Totals	23,214,704	3,485,949	2,718,000	410,300	27,888	48,658

March 21, 1931

Automotive Industries

Trunk Line territory.)* In 1930 about 20 per cent of the passenger cars were sold by the dealers located in C. F. A. territory.

Then, on April 20, New England Freight Association territory and Eastern Trunk Line Association territory will be affected by a reduction brought about by a change in classification of passenger cars from 110 per cent to 100 per cent of the first-class rate. This change in classification applies throughout Official classification territory (which includes C. F. A., Eastern Trunk Line and New England rate territories), but will have practical significance only in the latter two rate areas because the specific commodity rate reductions already in effect on April 10 in C. F. A. territory are so great as to make C. F. A. rates already lower than does the change in classification.†

No further change in *classification* is expected in Southern and Western classification areas since motor vehicles have always been classified at 100 per cent of first class in those territories; the reduction in classification from 110 per cent to 100 percent in official territory, therefore, brings that territory to the same basis as that which already has existed in the other classification territories in the past.

As matters stand now, therefore, definite commodity rate reduction, effective April 10, has been made in C. F. A. territory.

What will happen in the six other rate territories as regards reduction in specific commodity rates?

Generally, that question can safely be answered somewhat like this:

It is practically certain that rate reductions somewhat similar to those effective in C. F. A. territory on April 10 will be made in at least five of the remaining six territories, and probably in all of them. Nobody can guess definitely the date on which these further reductions will become effective, but one authority close to rate change practices hazards the opinion that reductions will actually be effective in

*New reduced commodity rates will go into effect as early as April 5 in the Illinois and adjacent areas of the C. F. A. territory, according to late news received just before going to press. See page 492 in the news section of this issue for details.

†In addition to the seven major rate territories the country is divided into three so-called "classification territories": Official (which embraces the areas covered by the C. F. A., Eastern Trunk Line and New England rate territories); Southern (which embraces areas covered by Southern Freight Association territory), and Western (which embraces areas covered by Western Trunk Line, Southwestern Freight Bureau and Transcontinental Freight Bureau territory). See map at right.

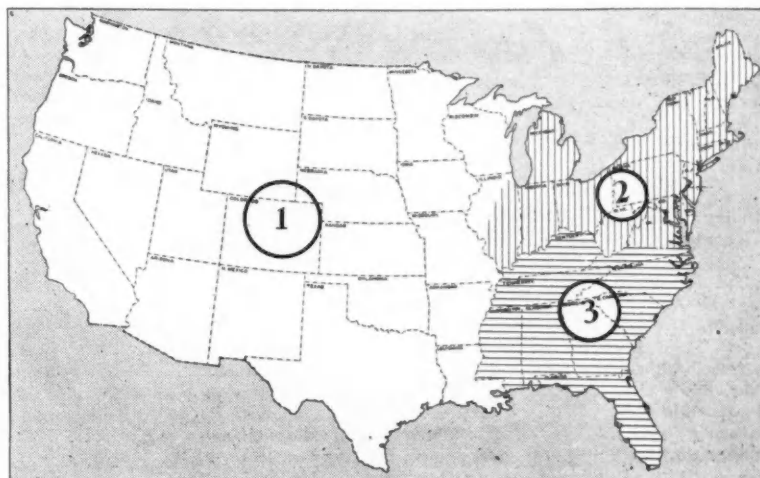
Map 2 Freight Classification Territories

1. Western Classification Territory
2. Official Classification Territory
3. Southern Classification Territory

Every commodity shipped by railroad freight is placed in a general classification; this is the first step in rate construction. All articles within a class are given the same rate unless special or commodity rates are made as exceptions to the classifications or as commodity rates.

The new automobile rates which become effective in C. F. A. rate territory April 10 are special commodity rates.

Throughout the Official Classification territory, however, which includes C. F. A., E. T. L. and N. E. rate territories, the classification of automobiles has been changed to 100% of first class from 110% of first class which has thus far been applied to them.



To the reader:

Two simple maps accompany this article. Your enjoyment and ready understanding of this vividly interesting tale will be materially increased if you will refer to them frequently as you read.

Incidentally, the editors are particularly eager to find out how many of their readers like this type of article, which is slightly off the beaten track. Won't you give us your reaction? Thank you!

all except the Transcontinental Freight Bureau territory by July 1, 1931.

Specifically, it is known that railroad executives are actively working on rate-reduction schedules in every territory.

With some few points in Western Trunk Line area affected by the C. F. A. reductions, for example, a special committee of Western Trunk Line railroad executives is checking rates between other points in W. T. L. territory with a view to revision.

Southwestern railroads already have petitioned the Interstate Commerce Commission for permission to establish greatly reduced rates on passenger automobiles from specific producing, manufacturing and assembling plants for hauls up to 500 miles in the Southwest Kansas-Missouri territories. (See *Automotive Industries*, March 7, page 425.)

Carriers in Southern Freight Association territory "are considering reduction in rates on automobiles, but definite conclusion has not yet been reached," according to a telegram from J. E. Tilford, chairman, Southern Freight Association, dated March 12.

There seems to be good foundation for the belief that specific commodity rate decreases will come about in the Eastern Trunk Line and New England territories in addition to the classification reduction from 110 to 100 per cent of first class already mentioned as effective April 20.

That leaves only the Transcontinental rate territory to be accounted for in some reasonably specific manner. The only official communication *Automotive Industries* has been able to procure prior to going to press is that contained in a telegram of March 13 from H. G. Toll, chairman, Transcontinental

tal Freight Bureau, which says: "No reductions contemplated at present automobile carloads by Transcontinental Bureau."

Specific arrangements regarding rate reductions on motor vehicles shipped from manufacturing and assembly plants in San Francisco, Oakland and other California points have been made between railroads serving these particular plants and the executives of those plants. These special adjustments, it is indicated, will affect primarily shipments from such factories as the Willys-Overland plant in Los Angeles, the Chevrolet, De Vaux and Fageol plants in Oakland, the Dodge plant in Stockton and the Ford plants in Long Beach and San Francisco.

While purely speculative in character, it might not be too hazardous to guess that general rate reductions throughout Transcontinental territory—which would be necessary if shipments of vehicles from the Detroit area to the Pacific coast are to be affected—will not become effective as soon as similar reductions in the other rate territories, although it is believed that ultimate reduction will come in the Transcontinental zone as well.

The chief basis for this speculation lies in the fact, previously mentioned, that this whole activity in regard to rate reduction has been brought about by the desire on the part of the railroads to meet driveaway and truckaway competition. It is on this basis that negotiations for commodity rate reductions on automobiles were initiated by the group of automotive industry traffic managers. And that it

was accepted by the rail executives as the basis for their actions is clear from the fact that the reduction tariffs issued in connection with the general C. F. A. reduction have written across their introductory page in clear black type, "Rates named herein are issued to meet driveaway and truckaway competition."

With that background in mind, together with the statement quoted from H. G. Toll, the reasons for hazarding the guess that reductions for the Transcontinental rate territory will be among the last to become effective are apparent.

Thus, by this interesting economic quirk, the 5600 passenger-car dealers in Transcontinental territory—whose sales efforts have been harassed by high delivered prices due to heavy freight charges more than have those of any of their Eastern colleagues—will probably be among the last rather than among the first to benefit from the general trend toward downward revision in rail rates which is now in progress. While there is no driveaway competition for the railroads on shipments between Detroit, Flint, South Bend and the Pacific Coast, the potentialities of water shipments, already becoming more common, almost inevitably will have their ultimate effect.

Whether or not the railroads actually succeed in getting back any considerable proportion of the motor vehicle tonnage lost to driveaway competition is a question which only the future can answer definitely. Should the new rates fail in their purpose from a rail viewpoint, there remains the possibility

Motor Vehicle Manufacturing and Assembly Plants in Each Freight Rate Territory

Certain plants, it will be noted, are listed twice—once in each of two rate territories. This results from the fact that, depending on special conditions, shipments to and from the cities in which these plants lie come sometimes under the rate provisions of one territory and sometimes under those of another.

New England Freight Association

Cambridge, Mass.*Ford
Somerville, Mass.*Ford
Springfield, Mass.duPont, Rolls-Royce
N. Tarrytown, N. Y.*Chevrolet

Eastern Trunk Line Freight Bureau

Washington, D. C.*Ford
Bloomfield, N. J.*Chevrolet
Edgewater, N. J.*Ford
New Brunswick, N. J.Int. Motor Co.
Norfolk, Va.*Ford
Plainfield, N. J.Int. Motor Co.
Buffalo, N. Y.*Chevrolet, *Ford,
Pierce-Arrow, Stewart
Cortland, N. Y.Brockway
Elmira, N. Y.American-LaFrance
Rochester, N. Y.Cunningham
Syracuse, N. Y.Franklin
Allentown, Pa.Int. Motor Co., Mack
Chester, Pa.*Ford
Butler, Pa.Austin
Pittsburgh, Pa.*Ford
Philadelphia, Pa.*Ford

Central Freight Association

Cincinnati, OhioAhrens Fox, *Ford
Cleveland, Ohio*Ford, *Hupp,
Jordan, Peerless, White
Columbus, Ohio*Ford, Segrave
Dayton, Ohio*Chrysler
Buffalo, N. Y.*Chevrolet, *Ford,
Pierce-Arrow, Stewart
Delphos, OhioGramm
Kent, OhioTwin Coach
Lima, OhioRelay
Norwood, Ohio*Chevrolet
Springfield, OhioInt. Harvester Co.
Toledo, Ohio*Chevrolet, Willys-Overland

Chicago, Ill.Diamond T, *Ford, Int.
Harvester Co., Walker Vehicle
Louisville, Ky.*Ford
Highland, Ill.Hug
Elkhart, Ind.Elcar
Auburn, Ind.Auburn
Evansville, Ind.Dodge Trucks
Fort Wayne, Ind.Int. Harvester Co.
Indianapolis, Ind.Duesenberg, *Ford,
Marmon, Stutz
Kenosha, Wis.Nash
New Castle, Ind.*Chrysler
Milwaukee, Wis.*Ford,
*Int. Harvester, Nash
South Bend, Ind.Studebaker
St. Louis, Mo.*Chevrolet, *Ford,
Gardner, Moon
Alma, Mich.LaFrance-Republic
Cadillac, Mich.Acme
Dearborn, Mich.Ford Motor Co.
Detroit, Mich.Cadillac-LaSalle,
Chrysler - Dodge - De Soto-Plymouth-
Fargo, Gottfredson, Graham-Paige,
Hudson, Hupp, Lincoln, Packard,
Ford
Flint, Mich.Buick, Chevrolet
Kalamazoo, Mich.Checker Cab
Lansing, Mich.Durant, Olds, Reo
Pontiac, Mich.G. M. Truck, Oakland
Grand Rapids, Mich.de Vaux
Pittsburgh, Pa.*Ford

Southern Freight Association

Jacksonville, Fla.*Ford
Atlanta, Ga.*Chevrolet, *Ford
Norfolk, Va.*Ford
Louisville, Ky.*Ford
New Orleans, La.*Ford
Charlotte, N. C.*Ford
Memphis, Tenn.*Ford

Southwestern Freight Bureau

Oklahoma City, Okla.*Ford
Dallas, Texas*Ford
Houston, Texas*Ford
Memphis, Tenn.*Ford

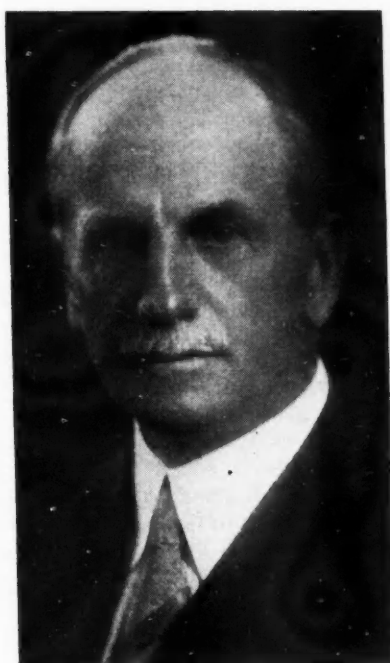
Western Trunk Line Committee

Des Moines, Iowa*Ford
Denver, Colo.*Ford
St. Paul, Minn.*Ford
Kansas City, Mo.*Chevrolet, *Ford
St. Louis, Mo.*Chevrolet, *Ford
Gardner, Moon
Omaha, Neb.*Ford
Fargo, N. D.*Ford
Kenosha, Wis.Nash
Janesville, Wis.*Chevrolet
Milwaukee, Wis.*Ford, *Int. Har-
vester Co., Nash
Racine, Wis.Nash
Salt Lake City, Utah*Ford
Chicago, Ill.*Ford, Int. Harvester,
Walker, Diamond T
Highland, Ill.Hug

Transcontinental Freight Bureau

Long Beach, Calif.*Ford
Los Angeles*Willys-Overland
Oakland, Calif.*Chevrolet, *de Vaux
Fageol
San Francisco, Calif.*Ford
Stockton, Calif.Dodge Trucks
Denver, Colo.*Ford
Portland, Ore.*Ford
Salt Lake City, Utah*Ford
Seattle, Wash.*Ford
*Assembly plant.

They Got Freight Rate Reductions for the Automotive Industry



J. S. Marvin, ass't general manager and traffic manager, National Automobile Chamber of Commerce, who cooperated



C. R. Scharff
(Chevrolet)



G. M. Sherman
(Studebaker)



Kenneth A. Moore
(N.A.A.C.C.)



E. D. Corinnell
(Buick)

Other members of the committee were J. H. Myber, Chrysler, and F. A. Allen, Hudson.



E. N. Hodges, manager traffic dept. of Hupp, who was chairman of the special traffic managers committee

of revising them upward again at the end of a year, since the C. F. A. rates—the only ones definitely filed so far—are what are known as “experimental rates” to be effective for a year from April 10, 1931. On the other hand, it might be just as accurate to speculate that, should the present reductions fail to get back the expected business, further reductions might be just as likely as a return to the higher scales.

What these rate reductions will mean in terms of specific makes and specific shipments to particular points obviously cannot be worked out definitely at the moment, since:

1. Only in C. F. A. territory and in Southern

Typical rates on assembled automobiles between points in Central Freight Association* territory, under the new C.F.A. schedule:

From Detroit or Dearborn, Mich., carload lot rates in cents per 100 lb.

To	Rates in Force Prior to April 10, 1931 (110% of Flat Class)	Rates in Force as of April 10, 1931	Saving in Cents	Saving in Percentage
Buffalo, N. Y.	83½	63	20½	24.5
Pittsburgh, Pa.	92	70	22	23.9
Parkersburg, W. Va.	90	75	15	16.7
Wheeling, W. Va.	92	67	25	27.2
Cincinnati, Ohio	87	60	27	31.1
Columbus, Ohio	78	52½	25½	32.7
Cleveland, Ohio	73	47½	25½	34.9
Toledo, Ohio	52½	30	22½	42.8
Youngstown, Ohio	83½	61	22½	26.9
Zanesville, Ohio	83½	59	24½	29.3
Indianapolis, Ind.	87	60	27	31.0
Fort Wayne, Ind.	70	42½	27½	39.3
Louisville, Ky.	99	80	19	23.7
Chicago, Ill.	87	60	27	45.0
Milwaukee, Wis.	97½	60	37½	38.5
Racine, Wis.	97½	60	37½	38.5
St. Louis, Mo.	110½	100	10½	9.5
Burlington, Iowa	110½	100	10½	9.5
Grand Rapids, Mich.	74½	45	29½	39.6

California are specific reduction schedules already filed and date of effectiveness announced, and, since:

2. Details as regards model, size freight car used, shipping methods, etc., result in an infinite variation in detailed saving.

Since the C. F. A. schedules are available, however, and since they give a specific example of what may be expected, in a general sense, in other rate territories, some detailed study of these schedules is worth while right now.

In an accompanying table are given typical rates on assembled automobiles between points in C. F. A. territory under the new C. F. A. schedules as compared to the old schedules in that same territory.

While fraught with technical and detailed inaccuracies, it is possible to get a fair idea of the saving involved in shipment of a particular automobile from one of these given points to another by applying the rates in this table to the weight of the given car. Bearing these reservations in mind, the following table has a certain comparative interest, assuming all shipments are made from Detroit:

Car Model	Weight	Pitts.	Cinn.	Cleve.	St. Louis
Chrysler 70 Brougham....	3490	\$7.68	\$9.42	\$8.90	\$3.66
Chrysler Imp. 7-p. Sedan..	4825	10.62	13.03	12.30	5.07
Hudson (119) 8 2-p. Coupe..	2865	6.30	7.74	7.31	3.00
Hupmobile S-2 Roadster...	2775	6.10	7.49	7.08	2.91
Essex Sport Sedan	2750	6.05	7.43	7.01	2.89
Ford Standard Sedan	2462	5.42	6.65	6.28	2.59
Packard (83) Sport Phaeton	4285	9.43	11.57	10.93	4.50
LaSalle 5-p. Sedan	4635	10.20	12.51	11.82	4.87

Many of these savings will be further increased because of the minimum weight feature referred to later.

Similar rough calculations of the approximate saving on any given model of a given make to a given destination, if shipped from Detroit, can be made by reference to the accompanying "Typical Rates" table and use of the car-weight figures available on pages 328-329 of the Feb. 28, 1931, issue of *Automotive Industries*.

It will be seen from these tabulations that, so far as these C. F. A. rate changes are concerned, the most drastic reductions appear within the areas relatively close to the manufacturing centers where truckaway and driveaway competition is most acute.

To begin with, these C. F. A. rates apply to shipments from about 36 car and truck manufacturing and assembling plants. (The names and locations of the various manufacturing and assembling plants in each of the freight-rate territories is shown in the table on page 466.) They apply to a territory in which are registered close to 5,000,000 of the 23,214,704 passenger cars now in operation and in which something like 550,000 new passenger cars were sold last year.

Term "Set Up" Means Fully Assembled

They apply to passenger automobiles, set up; freight automobiles, set up, and automobile chassis, set up, either with or without seat cabs. (The term "set up" in this connection implies that the complete vehicles are assembled, rather than "knocked-down" or disassembled into the component parts of the vehicle.) The vehicles or chassis may be shipped either in "straight" or mixed carloads; that is, there may be shipped under these rates a solid carload of passenger cars, a solid carload of trucks, a solid carload of chassis; or, a carload containing both passenger cars and trucks; or, a carload containing passenger cars and chassis; or, a carload containing passenger cars and trucks.

These new C. F. A. rates also involve changes in the railroad carload minimum weights upon which charges are based. (It has always been the practice of railroads to base carload rates on a minimum weight per carload.) Should a car be shipped with less than this minimum, then the shipper must pay for that minimum weight anyhow. Should he load into the car more than the minimum, then he pays for the actual weight of the shipment.

In the past, payment for shipments of more than minimum weight have been based on an arbitrary sliding-scale schedule, known as Rule 34, which has been in effect for many years. Under the new rates, however, in the C. F. A. territory, rates are based on different fixed carload minimum weights, for shipments in freight cars in the following size groups:

Shipments in carload freight cars, the inside dimensions of which do not exceed 40 ft. 7 in. in length, are based on a carload minimum weight of 10,000 lb. instead of 11,200 lb.

Shipments in freight cars exceeding 40 ft. 7 in. in length, but not exceeding 50 ft. 6 in., are based on a carload minimum weight of 13,500 lb. instead of 16,200 lb. Shipments in cars exceeding 50 ft. 6 in. in length are based on a carload minimum weight of 20,000 lb.

These reduced minima are a very important feature of the special tariffs. They are going to permit shipping with less loading expense at the factory through double decking of cars that has been necessary to avoid payment of freight charges on weight that is not in the

car. Similarly there will be less expense to the dealer in unloading and assembling cars that were partially dismantled for shipment.

These new minimum carload weights apply to all shipments of passenger cars, trucks and chassis in the special tariffs, but the railroads provide specifically that shipments loaded into more than one freight car are subject to the full carload minimum weight provided for each freight car used, whether the vehicles fill the freight cars or not. The carriers also provide that publication of these rates and minimum weights do not obligate them to supply freight cars having any specific dimensions other than length; that is, length is the only dimension which the shipper may specify and expect the carrier to be obligated to provide. The railroads, moreover, are not obligated to supply cars with inside lengths exceeding 50 ft. 6 in. These qualifications are necessary because of the scarcity of certain cars of special dimensions sometimes demanded by shippers.

Since the car or truck buyer and not the manufacturer, of course, pays the freight charges on vehicles, the manufacturer doesn't stand to get material, direct benefits from the rate changes which are in process. Study of the technical details of the new rates and carload minima may enable vehicle makers to devise additional economies in loading practices, but aside from this possibility little direct gain can accrue.

The value to the industry in enabling it to meet the now well-known "New Competition" of industry against industry for a greater share of the consumer's dollar can scarcely be overestimated. Stated broadly, the reductions will mean that vehicle manufacturers can make the same net profit on operations as heretofore even while the public pays for its automobiles between \$30,000,000 and \$50,000,000 a year less.

The effect of this on dealer morale and dealer operations is bound to be good. And during the transition period, during which reductions have become effective in some areas and not in others, it is likely, regardless of theorizing, that some of the extra margin created by reduction will find its way into the none-too-well-filled pockets of many dealers.

As they have read the general statements about freight-rate reduction this one practical question has popped into the minds of thousands of dealers:

The Dealers Wonder

"How much pressure am I going to get from factory sources to reduce delivered prices immediately in proportion to freight-rate reductions?"

Since a good many factory sales executives are pondering the same question, *Automotive Industries* made an informal survey of factory opinion on the subject this week. It is our belief, as a result of this investigation, that dealers in most lines don't need to worry much about pressure from their factories on this particular point. Here is the gist of the ideas we gathered:

1. No factory will expect its dealers to cut delivered prices until such time as they have disposed of all cars stocked before reductions became effective.
2. No factory will expect its dealers to cut delivered prices until rate reductions actually have become effective in their own territories.

3. Many factories won't expect any dealer to reduce delivered prices until rate reductions become effective throughout entire country. (That would mean probably not until May, June or July.)
4. Every factory will definitely recommend reduction of delivered prices to conform with freight-rate reductions eventually. Some of them will insist on such reductions more strongly than others.

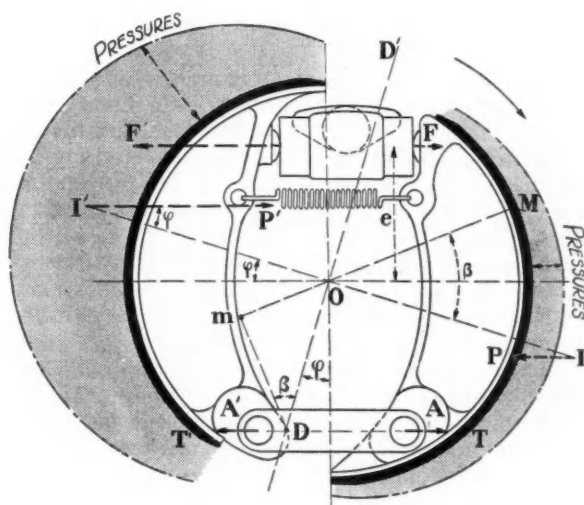
... And so the story ends—for this week. Further specific information will be coming along to fill in the broad outlines of the picture. But those broad outlines have already been painted. Reductions have started; more are definitely contemplated by the railroads, and the buyers of automobiles stand to get their automobiles delivered at slightly less cost per car in the next 24 months than they have in the past 24.

Variations in Sensitiveness of Self-Energizing Brakes

IN a contribution to the transactions of the French Academy of Sciences M. D. Sensaud de Lavaud states that the simplest and most attractive method of amplifying the effect of automobile brakes is by the friction of the shoes against the brake drum, that is, by the self-energizing principle. The magnitude of the self-energizing effect, however, depends upon the moments of the reactions at the contact surfaces around the stops and axes of articulation. With simple articulations or the usual radial stops, these centers are movable, changing their position with wear of the lining, eccentricity of the drum and deformation of the shoes.

Even though the linings may be reduced in length, which increases the rate of wear and the grabbing tendency, variable sensitiveness remains the chief fault of such brakes and limits their use. Only a judicious connection of the brake shoes which fixes the centers of pressure will result in a linear relation between the effort of brake application and the braking torque. To this end, floating shoes have been adopted, connected by links and operated hydraulically by opposed pistons, one for forward, the other for reverse motion, the second piston in each case forming a fixed stop, or point of brake anchorage. The brake shoes are centered spontaneously even if the drum is eccentrically mounted, and when the brake is released it cannot drag under pressure.

In the accompanying drawing, F represents the pressure of the hydraulic piston against one brake shoe and F' the reaction of the other piston against the second brake shoe. Both of these forces are parallel to the compressive force T on the link. Hence the reaction between the shoes and the brake drum, denoted by P and P' , must also be parallel to these forces. The centers of pressure I and I' are thus fixed on the diameter II' which is inclined to T at an angle ϕ corresponding to the friction angle, in the direction of rotation of the drum, II' being taken as the axis of symmetry of both linings.



An instantaneous movement of one of the brakes results from three rotary movements, one of these being around the center of the drum; the two others, which result in application of the shoes to the drum, around pivots A and A' , reduce to a single one at D on AA' , such that OD is perpendicular to the axis II' of pressures.

The pressure on the brake linings is distributed exactly the same as if the shoes opened around a virtual axis D . At any point M the pressure is proportional to the radial distance, that is, to the distance dM of

D from the prolongation of OM . Being a maximum on the diameter II' it varies for each shoe as the cosine of the arc β between M and I .

The coefficients of magnification n_1 and n_2 such as $T = n_1 F$, $F' = n_2 T$, will be the greater the closer the link for the one and the stop for the other is to the center. The overall coefficient is $n = n_1 n_2$, and $F' = nF$. Then the braking moment or frictional moment

$$C_t = e (F' - F) = eF (n - 1)$$

this being the moment of $F' - F$ around the axis of the brake.

Since $P' - P = F' - F$, the radial pressures of the leading and trailing shoes are unequal, and their inequality is the greater the lower the stop, that is, the greater the arc subtended by the lining. For $\phi = 30$ deg. the value of n is 10 to 15, according to conditions, while with conventional brakes 5 to 6 is the maximum. Such shoes may be provided with linings covering an arc of 140 deg. Linings covering a greater arc are not desirable, as the brake is said to be smooth and powerful and to show only one-third to one-half as much wear as ordinarily.

Stabilization of the centers of pressure denotes a decided advance in the technique of self-energizing brakes, remarks M. de Lavaud.

Sampling Inspection Maintains Economic Quality at the Western Electric Plant

By this method of quality control it is possible to approach the most favorable manufacturing conditions by properly balancing the process average, manufacturing tolerances and sample sizes + + +

RADICAL developments in quality control and inspection procedure are forecast by the success of the inspection engineering division of the Western Electric Co. on the firing line for several years at its Hawthorne (Chicago) plant where it has established a record for economy and production control. Without this practical and certainly authentic evidence, it would be difficult to convince the production man that quality control can be placed on a new and more efficient basis through the use of the modern statistical theory which requires an excursion into the mathematics usually reserved for engineers. So far as the mechanical features of inspection are concerned, the interesting thing is the evolution of a scientific sampling inspection method which will be described briefly in this article.

But to us a most significant thing is the development of a real workable quality control based on the modern statistical theory and applicable to almost any inspection problem. This will be developed more in detail to show how it may be applied in the automotive plant.

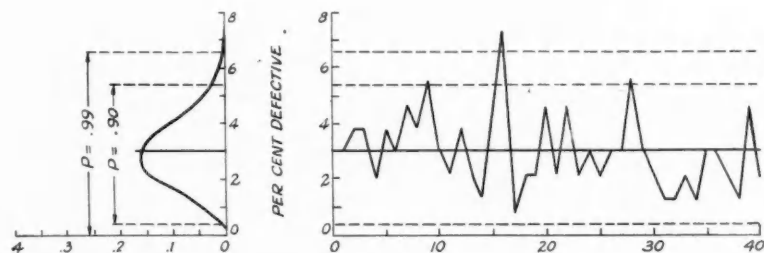
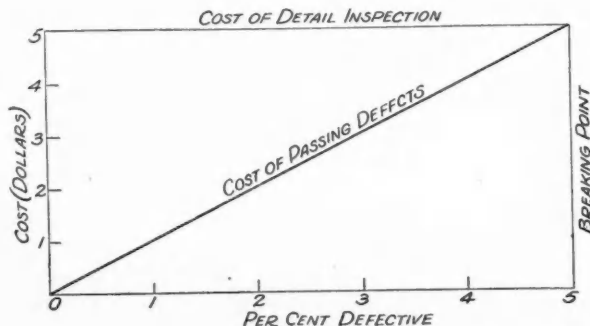


Fig. 1 (above)—The curve at the right shows the percentage of defective coils in lots of 200 pieces, while the one at the left shows the corresponding distributions of results the circles representing the relative number of times each percentage defective will be observed + + + +

Fig. 2 (right)—The graphical meaning of the breaking point. When the percent of defective exceeds the breaking point detail inspection would be more economical + + + +



Sampling inspection as it is practiced at the Western Electric Co. finds its more economical application in the large scale, continuous production processes and may be applied generally to such specific operations as screw machine work, small stampings, surface grinding, and centerless grinding. And probably one of the best applications lies in the field of destructive testing such as in the final inspection of heat-treated parts or the testing of small fuses where the ultimate inspection might require the destruction of the part.

In setting up a sampling inspection scheme, a great deal of preliminary study and statistical work is necessary. Among other things, it is first necessary to decide whether sampling inspection is safe from the standpoint of the amount of inspection, and economical from the standpoint of cost. The degree of safety is, of course, dependent upon the nature of the piece, manufacturing tolerances and previous experience with rejections. Naturally, where parts in automotive production require 100 per cent inspection, sampling inspection may not be safe, although it has been demonstrated that sampling sometimes gives results which are as reliable as 100 per cent inspection and at less cost. The function of the initial study is to establish the "process average" which is a long time history of the range of defectives; also to adjust manufacturing tolerances and experiment with these just as soon as the sampling scheme is introduced.

Before proceeding with the formal discussion of the sampling system, let us consider the possibilities of quality control based on statistical methods. At the very outset, the statistician provides us with a very useful factor which he calls process average. For our purpose this may be considered an index of the general run of quality or adherence to specifications. Obviously, every process to be within economical limits of manufacture is accompanied by a certain percentage of de-

Levels of

by
Joseph
Geschelin

fects and the process average may be used to represent the generally expected level.

If a weekly record of inspection is kept showing the number of pieces inspected and the number defective in each lot, a six-month or twelve-month period may be pictured, as in Fig. 1, thus showing at a glance the expected process average and the variations from it. A chart of this kind can be an invaluable tool to the management because it shows up the danger points and tells when an investigation of manufacturing conditions may be desirable. Incidentally, where quality control is important enough to warrant going into it on a large scale, the statistical theory also provides a means for establishing control limits, and it can be shown that any deviation from such limits is due to assignable causes which should be immediately spotted and eliminated.

Without digressing any further, let us analyze the Western Electric sampling scheme so as to develop not only its mechanical features, but also some of the fundamental ideas on which it is based. Since a number of new terms are used, we shall define them immediately as follows:

1. Average outgoing quality (AOQ) is the average per cent defective passed by a sampling scheme in the long run. The value of (AOQ) depends upon the incoming per cent of defects and upon the screening effect of the sampling scheme.

2. Average outgoing quality limit (AOQL) is the maximum average per cent of defects that can be permitted over a long period of time, regardless of lot size or incoming per cent of defects. Incidentally, they have found that the average outgoing quality reaches a maximum for any sampling scheme regardless of incoming per cent of defect.

3. Break even point (BE) may be defined as that percentage of defects at which the cost of weeding out the defects in a process inspection becomes equal to the cost of passing defective products on to succeeding stages of manufacture. Fig. 2 shows this graphically. Thus, when the percentage defective exceeds the break even point, it is evident that detailed inspection is the more economical method.

4. Process average (PA) is the average per cent of

LAYOUT FOR STATISTICAL SAMPLING INSPECTION

Material Inspected _____		Code or P. No. _____	
Material from Operating Dept. No. _____		Process Average Class _____ A.O.Q.L. _____ %	
Operating Dept. Operations _____			
Issue No. _____	For use by Insp. Sect. _____	Authorized and Approved by _____	Approval Date _____

Lot Size	1st Sample		2nd Sample		INSPECTION OPERATIONS
	SS	AN	ADD	SS	
0-50					
51-100					
101-200					
201-300					
301-400					
401-500					
501-600					
601-800					
801-1000					
1001-2000					
2001-3000					
3001-4000					
4001-5000					
5001-7000					
7001-10,000					
10,001-20,000					
20,001-50,000					
50,001-100,000					

Material to be Used on _____		Breaking Point (Actual) _____ %	
Check Inspection Base _____		Maximum Average % _____	
Period Defectives _____ %		Defectives Satisfactory _____ %	
Process Average (Actual) _____ %		Process Average (Estimated) _____ %	
From Records _____		Estimated By _____	
Dated _____			
Approx. Annual Output _____	Usual Lot Size _____	Job Grade No. _____	Est. Hrs. per Year _____
Delivery is Continuous <input type="checkbox"/>	Intermittent Irregular <input type="checkbox"/>	Non-Acceptable Lots are Detailed <input type="checkbox"/>	Rejected Either <input type="checkbox"/>
Old Sampling Scheme: Usual Lot Size _____	Sample Size _____	A.O.Q.L. _____ %	Process Average _____ %
REMARKS _____			
Notes by 6608 _____			
		Checked by _____	
		Date _____	

Fig. 3—When the inspection department has investigated a process and decided on a sampling system a study is set up as shown above + + +

defects under normal conditions. Abnormally high percentages are not included in the process average.

5. Lot size (LS)—generally the daily output of an operator, a gang, a machine or any other sub-division composed of pieces made in exactly the same way. The important thing is that the lot should represent the same set of conditions and this is the deciding factor in determining what constitutes a lot.

6. Sample size (SS) is the number of parts selected from a lot for inspection. The entire success of a sampling scheme depends upon the principle that the sample is a "random sample," representative of the entire lot by selection from all parts of the lot.

7. Acceptance number (AN) is the allowable number of defects in the sample.

Western Electric inspection is based on what they term a universal double sampling scheme in which the mechanical procedure is as follows:

1. Inspect a sample (SS).

2. If the first acceptance number (AN) is not exceeded, accept the lot. If the first acceptance number

is exceeded, but the second acceptance number is not exceeded, inspect a second sample.

3. If the total number of defects found in the first and second samples combined does not exceed the second acceptance number, accept the lot.

4. If the second acceptance number is exceeded, detail inspect the remainder of the lot.

The scope of the universal double sampling scheme has been limited to cases of lot by lot inspection in which the process average is less than the average outgoing quality limit. Destructive tests, extremely large or small lot sizes and extremely low process averages have to be handled by some other sampling method.

Studies to Check Up

When the inspection department has thoroughly investigated a specific process and has decided to establish it on a sampling basis, a study is set up according to Fig. 3. In all cases, the first step is the determination of process average. Two methods are open; one is to get the actual process average based on the long time history; the other to estimate it. Actual process average is calculated by dividing the number of defects by the number inspected after eliminating abnormal observations. When using the mathematical theory, the size of an abnormal observation is accurately determined and the inspection manual gives exact values for the guidance of the inspection department. When the inspection is on a sampling basis, only the first samples are included in these calculations.

It is desirable to base the process average on data running over a six-month period. However, if not enough inspection data is available, the process average may be estimated from available information, al-

though, in general, statistical sampling inspection should not be started until inspection data is available on at least 25 lots.

It is interesting to note that process average values usually are low. In fact, a study made some time ago showed that approximately 75 per cent of operations had a process average per cent defective of two per cent or less. A very small percentage of operations have process averages of more than 10 per cent defective.

To introduce the next step which concerns the selection of the proper sampling scheme, it is well to emphasize that sampling inspection presupposes that every accepted lot will contain a certain maximum number of defects. Accordingly, the sampling scheme is so designed that mathematically the chances that a greater number of defects will be present may be definitely limited. For example, Western Electric practice is based on a probability of 0.15, termed "consumers' risk," which means in effect that the chances of finding more than the tolerance number of defects in any given lot will not be exceeded more than fifteen times in a hundred. Naturally, this probability can be made any value, but it is obvious that as the consumers' risk is reduced, the cost of inspection goes up and ultimately approaches that of 100 per cent inspection.

Consequently, in setting up the sampling scheme using Fig. 3, it is necessary to determine the AOQL which is established after the value of maximum average per cent defective has been settled. In Fig. 4 is shown one of the standard charts from which the value of "average outgoing quality limit" at Western Electric is obtained. Similar charts are designed for other limits. As is evident from the chart, the lot size is exactly specified when the process average and AOQL are known.

The heart of the sampling scheme is the control of

Universal Double Sampling Scheme

Fig. 4

Average outgoing quality limit
0.1% defective

SS—Total in 1st sample

AN—Acceptance Number

ADD—Increase in sample

TOTAL—1st sample plus increase

AN in 2nd sample is allowable defects in total

* Single sampling only

Process Average	"A" 0 - .018%						"B" .0191 - .056%						"C" .0561 - .054%					
	1st Sample			2nd Sample			1st Sample			2nd Sample			1st Sample			2nd Sample		
Lot Size	SS	AN	ADD	TOTAL	AN		SS	AN	ADD	TOTAL	AN		SS	AN	ADD	TOTAL	AN	
0 - 50	40	0	*				40	0	*				40	0	*			
51 - 100	75	0	*				75	0	*				75	0	*			
101 - 200	120	0	*				120	0	*				120	0	*			
201 - 300	155	0	*				155	0	*				155	0	*			
301 - 400	215	0	115	330	1		215	0	115	330	1		215	0	115	330	1	
401 - 500	235	0	140	375	1		235	0	140	375	1		235	0	140	375	1	
501 - 600	285	0	145	430	1		285	0	145	430	1		285	0	145	430	1	
601 - 800	310	0	190	500	1		310	0	190	500	1		310	0	190	500	1	
801 - 1000	335	0	225	560	1		335	0	225	560	1		335	0	225	560	1	
1001 - 2000	475	0	320	795	1		475	0	320	795	1		475	0	320	795	1	
2001 - 3000	525	0	360	885	1		525	0	360	885	1		525	0	360	885	2	
3001 - 4000	575	0	405	980	1		575	0	405	980	1		575	0	755	1330	2	
4001 - 5000	605	0	435	1040	1		605	0	435	1040	1		605	0	800	1405	2	
5001 - 7000	690	0	515	1205	1		695	0	525	1220	2		690	0	930	1620	2	
7001 - 10,000	740	0	575	1315	1		740	0	1020	1760	2		740	0	1525	2265	3	
10,001 - 20,000	845	0	1270	2115	2		845	0	1660	2705	3		845	0	2325	3170	4	
20,001 - 50,000	1010	0	1495	2505	2		1010	0	2850	3860	4		1775	1	3600	5575	7	
50,001 - 100,000	1245	0	2690	3935	3		2140	0	4000	6140	6		2140	1	6190	8330	9	

quality which it produces. This is accomplished by keeping a record of continuous lot by lot inspection as in Fig. 5. Periodically these data are assembled on a standard form, Fig. 6, giving a weekly summary of results. The real value of this form lies in the quality control chart at the right which shows the variations in quality and changes in the process average over a long period of time. Probably the most important thing about this chart is the establishment of the dotted limit lines which are drawn about the process average to indicate the permissible range of sampling variations. They are so calculated that the per cent defectives in a sample of size equal to the "limit line basis" will fall between these limits 95 per cent of the time, the other five per cent falling outside.

Limit lines are calculated with the aid of charts which give numerical values directly. Space does not permit a detailed discussion of these charts, but it is important to know that they may be drawn for any kind of sampling scheme by means of formulas which form a part of the mathematical theory.

Now a word about the use of the data in Fig. 6 in controlling quality. First of all, the graph shows the changes in process average due to changes in method, design, etc. Again, it pictures the changes in limit lines brought about by variations in lot sizes. Obviously the value of limit lines lies in defining the border for per cent defective. Although the curve of per cent defective may fluctuate due to sampling variations, this need not cause alarm so long as the variations are inside the limit lines. Whenever the limit lines are exceeded, the change is greater than is expected from a uniform manufacturing process, thus indicating the presence of some assignable cause. Where such assignable causes are suspected, the line inspection or-

Fig. 5—A record of continuous lot by lot inspections should be kept + + + + + + + + + +

ganization starts a thorough study of manufacturing conditions. Still another significance of limit lines is to show changes in quality as indicated by a constant hugging of either limit line. This should be investigated because it may indicate undue laxity or severity in inspection or changes in the definition of a defect, particularly in border line cases.

By virtue of this constant check on inspection, it is possible to approach the most economical level of inspection cost and ultimately the most economical manufacturing costs by properly varying process average, manufacturing tolerances, and sample sizes. Here again a word of caution is necessary for it must be remembered that the success of sampling depends largely upon the screening effect due to sampling at each successive stage in the manufacture of a single piece. Sampling may not be safe, for example, if it is applied only as a final inspection prior to shipping the finished

part. Moreover, since sampling implies the possibility of passing a certain number of defects, wherever this is not safe or advisable, detailed inspection is the only remedy.

The foregoing gives some idea of the double sampling inspection used at Western Electric. Because of space limitations, a great deal of the detail has been condensed, but enough has been shown to demonstrate the practical application of statistical methods in one of the largest manufacturing industries. We are all aware that in many plants some form of sampling inspection is employed, but usually the standards are accidental and certainly have neither the stability nor the justification of the sampling scheme which is backed by a specific mathematical theory.

Double sampling is only one form of statistical inspection. A simpler form is the single sampling method which involves the following procedure:

"D" .0541 - .072%						"E" .0721 - .090%						"F" .0901% AND OVER					
1st Sample			2nd Sample			1st Sample			2nd Sample			1st Sample			2nd Sample		
SS	AN	ADD	TOTAL	AN		SS	AN	ADD	TOTAL	AN		SS	AN	ADD	TOTAL	AN	
40	0	*				40	0	*				40	0	*			
75	0	*				75	0	*				75	0	*			
120	0	*				120	0	*				120	0	*			
155	0	*				155	0	*				155	0	*			
215	0	115	330	1		215	0	115	330	1		215	0	115	330	1	
235	0	140	375	1		235	0	140	375	1		235	0	140	375	1	
265	0	145	430	1		265	0	145	430	1		265	0	145	430	1	
310	0	190	500	1		310	0	190	500	1		310	0	190	500	1	
335	0	225	560	1		335	0	225	560	1		335	0	225	560	1	
475	0	320	795	1		475	0	320	795	1		475	0	320	795	1	
525	0	690	1215	2		525	0	690	1215	2		525	0	690	1215	2	
575	0	755	1330	2		575	0	755	1330	2		575	0	1090	1655	2	
605	0	800	1405	2		605	0	1170	1775	3		605	0	1170	1775	3	
690	0	1375	2065	3		690	0	1375	2065	3		690	0	1755	2445	4	
740	0	1910	2650	4		740	0	1910	2650	4		1260	0	2200	3460	6	
1500	1	2525	4105	6		1500	1	3085	4585	7		1500	1	4825	6325	9	
2360	2	4400	6760	9		2360	2	6050	8410	12		3000	3	6450	9450	14	
2920	2	7425	10345	12		4440	4	8425	12865	16		6450	7	10560	17010	22	

1. Inspect the sample.
2. If the acceptance number for the sample is not exceeded, accept the lot.

3. If the acceptance number is exceeded, inspect the remainder of the lot.

Automotive production executives will find it well worth their while to study this modern management tool with its possibilities of effecting major economies in inspection as well as overall manufacturing costs. Frankly, it would be misleading to say that sampling inspection can be quickly installed anywhere. It requires considerable study and an accurate balancing of all the factors involved; moreover, it involves the acquiring of a working knowledge of the modern statistical theory. However, the material is available and the quality control department may find it to be a power-

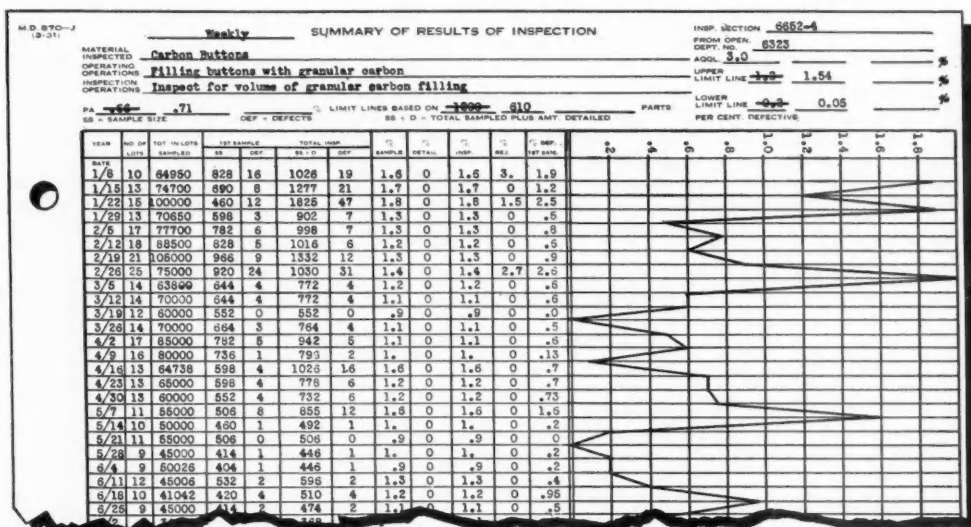


Fig. 6—A summary of the lot by lot inspection records was made each week + + + + +

ful tool, indeed. Finally, we cannot over-emphasize the possibilities of control charts, particularly since these control charts may be used for any kind of inspection whether it be sampling or detail.

Machine for Cleaning Cylinder Blocks

AN interesting method for cleaning cylinder blocks before final assembly has been worked out for one of the automotive plants in Detroit. The blocks are of course cleaned at various stages between operations and it only remained to provide a simple effective means to clean them thoroughly just before they reach the assembly line.

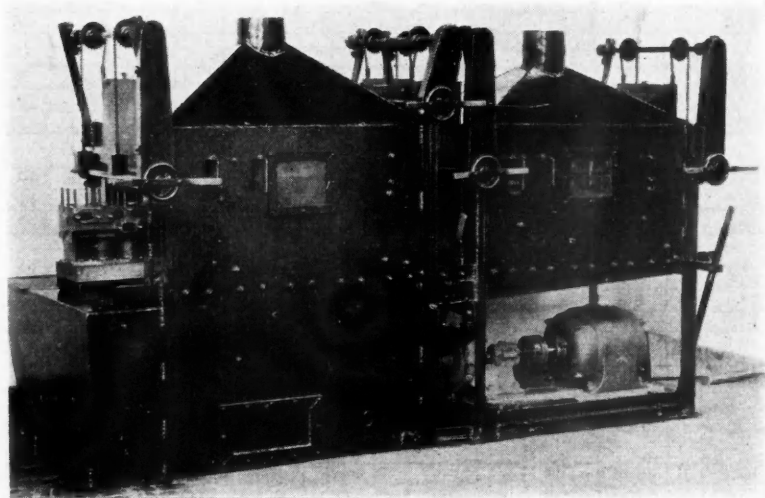
The block reaches the cleaning machine riding on a wood pallet on a roller conveyor and enters a vapor-tight chamber where it encounters an automatic stop. From a large number of correctly placed nozzles oleum spirits are sprayed onto and into the casting, the nozzles being so arranged as to register accurately with all the valve holes and with the cylinder bores. The solvent loosens all grease, oil, dirt, chips and other foreign matter.

The operator then releases the block which travels into the next compartment where a second series of nozzles, similarly placed, plays the casting with air under high pressure, removing the loosened dirt and such excess spirits as may remain in pockets in the casting.

The nozzles are so mounted that the pull of a lever repositions the nozzle assembly to register with a different size of cylinder block. Thus two sizes of blocks are handled by the machine without change of the equipment.

The cleaning spirits are circulated under 35 lb. pressure by a direct motor driven centrifugal pump. The spirits are valuable and a distillation system has been provided

so the contaminated spirits may be run through a still, removing all grease, oils, chips, iron rust and abrasive materials. Distillation is accomplished at a low cost per gallon. Loss due to evaporation in the cleaning machine is negligible due to the vapor-tight chamber and thus the entire cleaning operation is comparatively inexpensive. The cleaning machine was built and installed by N. Ransohoff, Inc., Cincinnati, Ohio.



This cleaning machine for cleaning cylinder blocks was installed in a Detroit plant + + + + +

March 21, 1931

Automotive Industries

JUST AMONG OURSELVES

The I.C.C. and the Contract Carrier

SOME people think truck contract carriers ought to be subject to the same sort of rate and competition supervision as the railroads and other common carriers. Truck makers and operators are not of this mind, although contract carriers already are regulated in a number of states. LaRue Brown and Stuart N. Scott, N.A.C.C. legal protagonists, contend in a recent, voluminous foot-noted article that such control of private carriers is not only illogical but also unconstitutional.

Back of the scenes, however, lurks the chance that—even though common carrier regulation principles are proved unsound and unconstitutional as applied to contract carriers—somebody eventually will devise some means of rate and competition control for contract carriers which will be specially adapted to them. And specific regulation as regards competition would involve rate regulation almost certainly. As Brown and Scott point out in the aforementioned article, "If it be assumed, *arguendo*, that a constitutional method of exclusion of some of those seeking to engage in the business of contract carriage could be devised, it is a necessary corollary that regulation of rates and practices must accompany it. Otherwise the exclusion of free competition, if effective, would be mischievous."

With these possibilities of future specific regulation existing, it is safe to predict that automotive men of all kinds will have to learn more, as time goes on, about I.C.C. methods and operations, more about railroad rate

structures and more about what application of similar structures might mean in motor transport development.

It becomes more and more evident that some form of state and national regulation in relation to private, contract truck carriers will increase as time goes on. If the automotive industry has a positive program indicating a type of regulation which will foster growth—even if that program be not published until necessary—it will have a better chance of keeping out of the toils of a purely restrictive and repressive sort of legal or rate structure.

Would You Have Thought It?

NOW it's going to be told! All about shipments of used cars and trucks to export markets!

From now on movements of such merchandise will be an open book. Beginning with the January figures—which are now out—Department of Commerce classifications will show number, value and country of destination of all used vehicles shipped from the United States. (Only the records refer to them as "second-hand.")

In January, 1931, \$126,505 worth of second-hand cars, trucks and buses were exported. That looks like this exporting of used vehicles is at least a million-dollar-a-year business and perhaps a million-and-a-half.

\$115,272 for Used Cars Exported in January

THESE January, 1931, figures show that 245 passenger cars, valued at \$115,272, were exported.

Mexico got by far the biggest single shipment—95 cars at an average price of about \$289. Panama got 25 whose price averaged about \$581; Netherlands got 19 at an average of about \$755, and Norway 18 at a price average of about \$498.

Mexico bought 26 out of the total of 34 second-hand trucks and buses shipped abroad in January. These 26 were sold for \$4,708. The average price of the whole 34—remainder of which were scattered to Norway, Canada and Panama—was about \$330.

Well Worth Watching

RECENT changes in automotive export statistics by reason of which these second-hand vehicle shipments are being segregated, A. W. Childs, chief of the Automotive Division of the Department of Commerce, writes us, were put into effect "after conversations with officials of the National Automobile Chamber of Commerce, who endorsed the plan, in order to present a clearer picture of our automotive export trade."

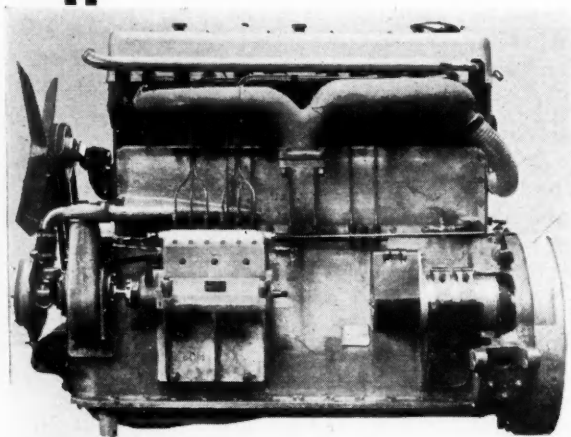
Certainly these figures are going to be interesting as time goes on and some real quantitative measure of the extent of this trade can be set up. It has been common knowledge that such a trade was going on in some volume and more than one automobile dealer last year was glad to get rid of a block of used cars to an exporting organization. Car factories in general have frowned seriously on such disposal of used car stocks, but that has not prevented dealers from doing business with exporting houses handling second-hand equipment.

Now at least the extent of the second-hand vehicle export trade will be known accurately—a desirable condition from the point of view of all concerned.—N.G.S.

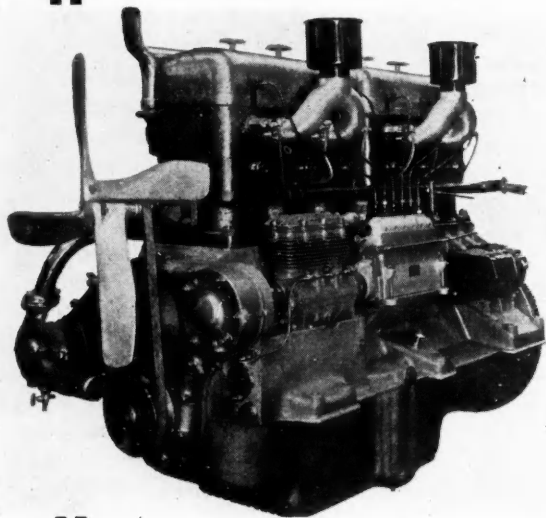
Crippled German Truck Industry Six-Wheelers and More Horsepower

The 12-cylinder Henschel of 250 hp. and shared the honors of attention with the and embodying the same principle for

by Edwin



M.A.N. six-cylinder 100
hp. Diesel engine + +



Buessing six-cylinder 100
hp. Diesel engine + +

ALTHOUGH a number of German commercial vehicle manufacturers have gone into bankruptcy since the last previous show and others have entered mergers, every stand in the hall devoted to commercial vehicle exhibits at the Berlin automobile show is occupied, and the galleries are crowded with exhibits of accessories and articles of equipment.

The 1928 show was remarkable for the large number of six-wheelers that were displayed for the first time. This time interest centers more around the engines, and particularly around those of the Diesel type, of which several new ones have appeared. Six-wheeler design shows no new features; of course, small refinements have been made, but, on the other hand, some of the most interesting vehicles of this class at the last show have disappeared, and, curiously enough, they are all of the type that had independently sprung wheels. Thus the NAG (which company, except for its passenger-car department, is now affiliated with Buessing), the Duerkopp and the Hansa-Lloyd six-wheelers are off the market. The latter company is still in existence, but confines itself to four-wheelers of up to five tons' capacity.

Development in four-wheelers also has been limited to refinements, and no entirely new types are in evidence. Considerable improvements in transmissions have been effected by the very extensive adoption of the new "Aphon" gearboxes of the Zahnradfabrik Friedrichshafen. These have four or five speeds, of which the first or the first two only are of the normal sliding type, while the others, with helically cut, ground teeth, are in constant mesh and operate silently. The new Maybach transmission also is frequently met with. Where powerful engines are fitted, the fourth or fifth speed is an over-drive, and in one case this applies to both. Braking systems are still very varied. Hydraulic brakes are employed in some vehicles of smaller capacity. Buessing-NAG, Henschel, Hansa-Lloyd (in one model), and some others use the Bosch-Dewandre vacuum booster, even with Diesel engines. In the latter case the engines have provisions made for the use of a throttle in the air inlet pipe to produce the necessary degree of vacuum to operate the booster. Knorr compressed airbrakes are found on all ve-

Concentrates Upon Diesels, At Berlin Automobile Show

a piston displacement of 1342 cu. in. ten-wheel Krupp designed by Flettner steering as used in his marine rudder

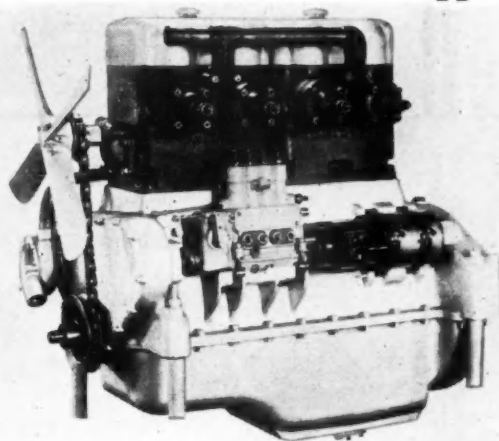
P. A. Heinze.

hicles designed to haul trailers. While the majority of vehicles are thus quite conventional, there are a few of outstanding interest, to which reference will be made later on.

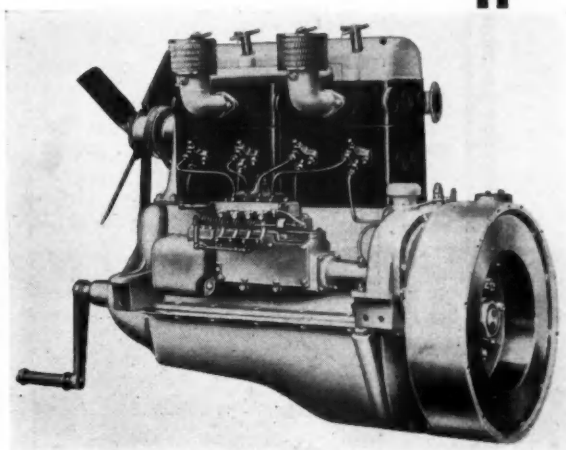
Not counting exhibitors of tractors, only 14 German and six foreign makers of trucks and buses are represented at this show. The non-German makers are Citroen, Ford, General Motors, International Harvester, Renault and Tatra. None of these, however, exhibits vehicles with new features of particular interest. It is worth noting that Stoewer, which firm abandoned the truck field years ago, has now returned to it, and rumor had it that they would manufacture the British Morris light truck under license.

As already indicated, the most important developments were in the powerplants. The most powerful gasoline engines at the 1928 show were a 130-hp. Vomag and a 160-hp. Buessing. However, these six-cylinder, valve-in-head engines were at that time not quite ripe for production, and of the Buessing nothing was heard again till the present show. In the meantime both engines have been placed in production. The Buessing has a piston displacement of 700 cu. in., the Vomag of 775 cu. in. New engines of 150 hp. have been developed by Krupp, MAN and Maybach. The first two are six-cylinder designs, while the last is an adaptation of the Maybach 12-cylinder passenger car engine and is fitted with a governor. The Krupp has a piston displacement of 775 cu. in., the MAN of 745 cu. in., and the Maybach of 482 cu. in. From the piston displacements it may be judged that the first two are of the low-speed type. German designers for the most part adhere to the large-volume, low-speed engine, because they regard it as the most economical type. Maybach is an exception, and his 12-cylinder coach engine, of which quite a number are in use in German long-distance motor transport, has a governed speed of 2400 r.p.m., being provided with a centrifugal type of governor that controls the throttle through a vacuum relay.

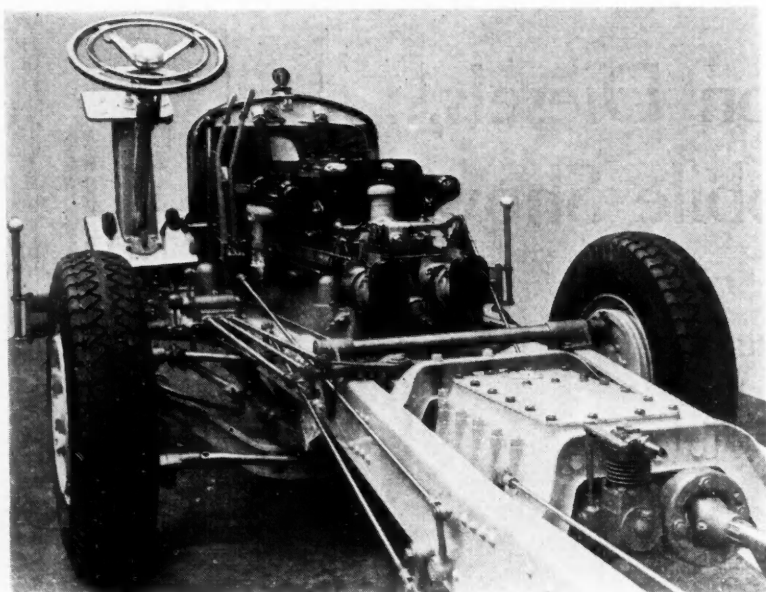
By far the most interesting among these new large engines is the one developed by Henschel. It has two banks of six cylinders each, mounted on a common crankcase, with two crankshafts geared together. The cylinder banks are blocked together but



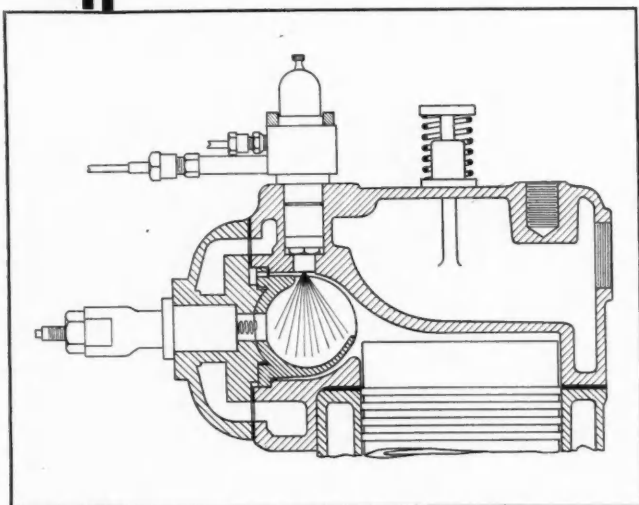
Vomag four - cylinder 80
hp. Diesel engine + +



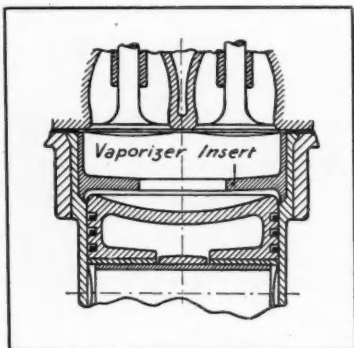
M.W.M. four - cylinder
Diesel engine + + +



Forward end of Henschel truck chassis
with 12-cylinder engine + + + +



Oberhaensli pre-combustion
chamber in use on Vomag
Diesel engine + + +



Section through combustion
chamber of Krupp
oil engine, showing vapor-
izing ring + + + +

have separate waterjackets, with holes cored between them through which pass the pushrods for the valves in the heads of both cylinder banks. This engine has an output of no less than 250 hp. and a piston displacement of 1342 cu. in. It was developed in the first place for use in a large six-wheel coach chassis together with a separately mounted five-speed transmission. This transmission has no direct drive, the power being transmitted by gearing from one shaft to a parallel one for all speeds. From the transmission the drive is through an open propeller shaft to the tandem-drive rear axles. First speed and reverse in this gearbox are obtained by a sliding pinion, while the gears for all other speeds have helically cut and ground teeth and are in constant mesh, engagement being by jaw clutches. The third speed corresponds to a direct drive, in that the gear ratio of this set is 1:1. Both the fourth and fifth speeds are geared up. The driven

shaft is provided with a governor, which closes the carburetor throttle as soon as the vehicle reaches a certain speed. With the fifth gear in operation, the vehicle speed governor holds the engine speed down to 580 r.p.m., at which speed the engine delivers 100 hp. This power will keep the vehicle going at top speed on any level road. A second governor is fitted directly to the engine to keep it from racing when the accelerator is accidentally depressed with the gearbox in neutral and when running in low gear.

The tendency toward increase in engine power is no less evident in the Diesel field. Buessing-NAG, Henschel and MAN have brought out new Diesel engines of 100 to 110 hp. output. In 1928 70 hp. was the upper limit. Other new Diesel engines of smaller output have been introduced by Vomag and Motoren-Werke Mannheim, while Daimler-Benz, Humboldt-Deutz and Junkers exhibit their old types with some recent improvements. Buessing-NAG and Henschel in their new Diesel engines use many parts of their large carburetor engines. Both are six-cylinder types. The Buessing-NAG has a precombustion chamber of the Koerting type and uses a Bosch pump, nozzles and heating plug. The Henschel uses the Bosch-Acro system with air pockets in the pistons, in combination with Bosch pump and nozzles, but without the heating plug. The new six-cylinder MAN Diesel is similar to the former model in using direct injection, but the makers have switched from their own pump and nozzles to those made by Bosch. The new Vomag Diesel is an interesting design, which incorporates a type of precombustion chamber evolved by the Austrian engineer Oberhaensli. It has two cylinder blocks of two cylinders each and develops 80 hp. The precombustion chamber, which is spherical in form, is located on the left side of this cylinder head. A Bosch fuel nozzle enters this chamber vertically from above, while a heating plug for starting the engine from cold is located in the side. The lower wall of the precombustion chamber, against which the injected fuel impinges, is slightly separated from the wall of the cylinder head below it, so it is in contact with the hot

gases on both sides and is maintained at a high temperature.

The Motoren-Werke Mannheim have introduced two new Diesel engines, one a four-cylinder of 52 hp. output, and the other a six-cylinder of 80 hp. Both are similar in design and employ a modification of the Acro air chamber, in the form of a bottle cast in the cylinder head. It is located to one side of the cylinder and slopes down toward one corner of the combustion chamber, with which it communicates through perforations in a steel plate. A Bosch injection nozzle is directed upward against the outlet from the air chamber, in the form of a bottle cast in the cylinder head. It is located to one side of the cylinder and slopes down toward one corner of the combustion chamber, with which it communicates through perforations in a steel plate. A Bosch injection nozzle is directed upward against the outlet from the air chamber. Almost the whole charge of compressed air is driven into the air chamber. When the fuel nozzle discharges, the fuel spray is ignited by the super-compressed air in the nozzle recess, and during the down stroke of the piston the powerful air current from the bottle meets the fuel spray at an angle from the nozzle into the combustion space.

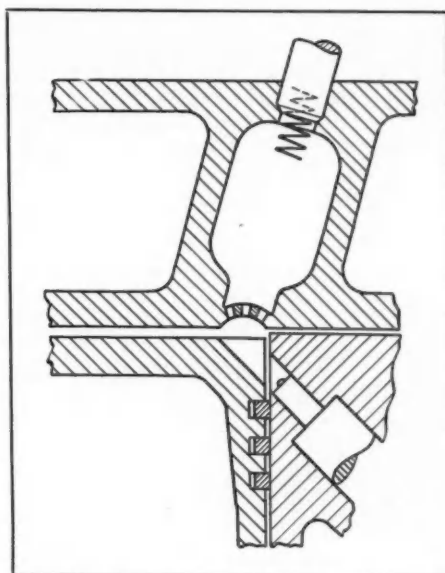
The other Diesel engines, Daimler-Benz, Humboldt-Deutz and Junkers, are sufficiently well known not to require description. Daimler-Benz, however, have altered their precombustion chamber and speeded up their engine, and they now obtain 85 instead of 70 hp. from it.

A new heavy oil engine not of the Diesel type has been developed by Krupp. It is made in both four and six-cylinder types of 110 and 65 hp. respectively, and is said to be capable of running on practically every kind of heavy fuel. These engines are of the same general design as gasoline engines, with valves in the head, but they are provided with two carburetors, one for gasoline and the other for the heavy oil. They are started up on gasoline and then automatically switched over to heavy oil as soon as they have reached a certain temperature. The vaporization of the heavy fuel is achieved by means of a GFK vaporizer, a device brought out in 1928.

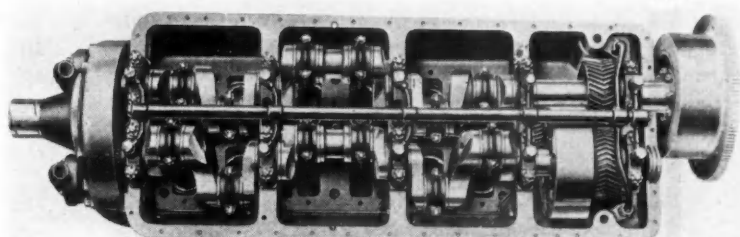
The Krupp company acquired a manufacturing license under the patents on it and perfected the device, which consists of a metal insert in the combustion chamber, as shown in the drawing. When starting up on gasoline this insert becomes red hot, so that when the heavy fuel is switched on, the latter, coming in contact with this metal, is rapidly vaporized and burned. Automatic control is achieved by means of a thermostat in the radiator which closes an electric circuit as soon as the water has reached a certain predetermined temperature. A relay is operated by the current, and the gasoline carburetor is cut out, while at the same time the heavy oil carburetor is opened. The engine will burn the heavy oil satisfactorily only above a certain speed, and the carburetors, therefore, are linked up with the accelerator in such a way that when the vehicle is slowed down the oil carburetor is cut out and the gasoline carburetor switched on again.

Turning to vehicles again, there is one of very unusual design which was built to the order of a large German motor-trans-

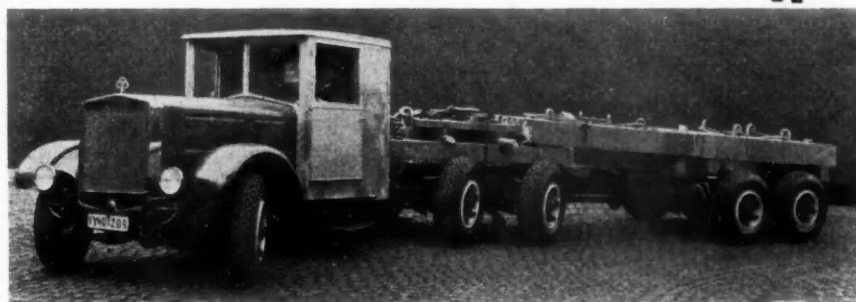
port company by Krupp, according to designs of the German engineer Flettner. It represents a new application of the principle embodied in the Flettner rudder, which is well known to ship builders. This vehicle consists of an eight-wheel main carriage, to the front end of which is hitched a two-wheeled fore carriage. The latter carries a 150-hp. gasoline engine and the driver's cab, a normal



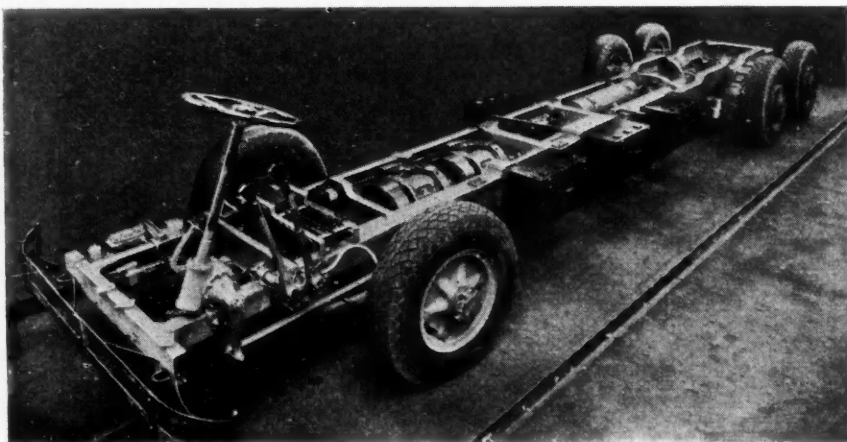
Air chamber of M.W.M.
Diesel engine + + + +



Bottom view of Henschel twelve-cylinder engine showing two crankshafts geared together



Flettner-Krupp ten wheeler of 15 tons capacity, which embodies an easy-steering principle + + + + +



M.A.N. trolley bus chassis



Rumpler front-drive delivery wagon with enclosed wheels + + +

steering gear working the two wheels in the usual way. The frame of the fore carriage is connected by linkages to the four front wheels of the main carriage in such a manner that when the fore carriage is steered around a corner these four wheels have to follow in its track. Power is transmitted from the fore carriage through a very long propeller shaft with a number of universal joints to a rear drive axle with differential gear mounted rigidly in the frame of the main carriage between the first and the second set of rear wheels. These run on stub axles projecting from a hollow case parallel to the axis of the main carriage. The four cases are pivoted to the casing of the rear drive axle and the power is transmitted from the latter through a train of gears inside the wheel cases to the wheel stub axles. The cases are independently sprung, so that each of the four driven rear wheels may move up and down independent of the others. The object of the design is to obtain a vehicle capable of carrying large loads (15 tons) on pneumatic tires, which will be easy to steer.

Speaking of pneumatic tires, it should be pointed out that solid and cushion tires are now illegal on new vehicles in Germany, while old vehicles are allowed a period of grace till 1935. In this same connection,

speed limits for pneumatic-tired vehicles on open country roads have been raised, which is one of the principal reasons for the present interest in high-power engines in Germany.

Front drive for commercial vehicles is making progress in Germany. At the 1928 show there was a Vomag coach chassis with Voran front drive, and this time there are three other chassis and cars with front drive. Henschel has acquired a manufacturing license from Dr. Rumpler, and the latter himself has built a number of large front-drive vehicles, two of which are to be seen on other stands. A feature of the Rumpler commercial vehicle chassis is the use of four small instead of two large rear non-driving wheels, which eliminates the need for wheel houses in coach bodies.

On the Henschel stand is shown an interesting railcar with four wheels, the flanged rims of which are separated from the hubs by a thick layer of rubber. The coach has a 100-hp. gasoline engine at one end, the radiator being flush with the end wall. The powerplant is identical with that of standard front-drive bus chassis, but, of course, there is no steering gear. The driver's cab is entirely insulated from the passenger coach, sponge rubber being used for the joints of this partition. As this coach can be driven from one end only, it is meant to be coupled with a similar coach facing the other way. The advantage of this system is that, owing to the use of standard automotive parts, the production costs are greatly reduced. Both coaches together cost only \$17,850, which is about half the price charged for a single Diesel rail coach with a seating capacity of 70, while the two coaches will accommodate 120 to 140 passengers. All wheels being individually sprung, in addition to having rubber inserts (which latter, by the way, take some of the lateral shock when entering curved sections of track), the riding comfort is exceptional.

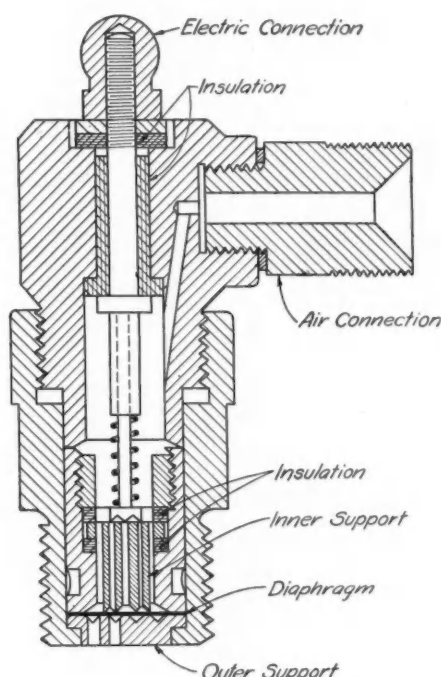
Trolley Coach Exhibited

A Buessing-NAG rail car is being demonstrated outside the hall. This vehicle looks exactly like a Twin Coach, but has only a single engine, under the seats on one side. German makers seem to have awakened suddenly to the possibilities of the trolley coach, as Krupp, Daimler-Benz and MAN are all exhibiting vehicles of this type—Krupp and MAN six-wheelers, and Daimler-Benz a four-wheeler.

Finally, a word may be said regarding bodies. The all-metal type is in complete possession of the field, Daimler-Benz and others show coach bodies made entirely of Lantal and other light metals. One all-steel coach is shown, the steel roof of which can be removed by four men, and underneath it is a folded fabric "sunshine" roof that can be opened and closed with one hand with the aid of a crank.

Mention should be made also of a steering torque amplifier developed by the Robert Bosch company. It is of the electro-pneumatic type, the valves of a vacuum cylinder being operated by electro-magnets controlled by contacts opened and closed by means of the steering wheel.

Neon Lamp Used to Indicate Contact in New Maximum Pressure Indicator



Technical view of pressure element + + + +

Facilitates use of instrument in studies of experimental compression-ignition engines of the multi-cylinder type + + +

and it is clamped down to a $\frac{3}{8}$ -in. free diameter. The diaphragm is made of Swedish blue-tempered spring steel, as thin as the pressures to be measured will permit; for pressures up to 800 lb. p. sq. in. a thickness of 0.004 in. is used, and for pressures up to 1500 lb. p. sq. in., 0.008 in.

The diaphragm is mounted in the pressure element between supports which allow it approximately 0.005 in. movement at its center and restrain it so it is never stressed beyond its elastic limit. The outer support is dished to allow this movement. The inner support is not in contact with the diaphragm but is less than 0.0005 in. from it when in its normal position. Using a formula for the deflection of thin disks under pressure, given by Arthur Morley, it is found that a pressure of less than 4 lb. p. sq. in. is required to cause the 0.004-in. diaphragm to deflect sufficiently from its extreme position to make contact.

A NEW maximum-pressure indicator has been designed and built at Langley Memorial Aeronautical Laboratory for test on experimental high-speed compression-ignition engines, and a description of the instrument appears in Technical Note No. 359 of the National Advisory Committee for Aeronautics by J. A. Spanogle and John H. Collins, Jr.

The instrument is of the balanced-diaphragm type in which a diaphragm of negligible stiffness is exposed to the cylinder pressure on one side and to a controlled air pressure on the other. It was found that an uncooled diaphragm could be brought within $\frac{1}{8}$ in. of the interior wall of the combustion chamber and kept sufficiently cool to prevent its rupture, and it was thought that any softening of the diaphragm by the heat would have no other effect than to increase its sensitivity.

Since the pressure element screws into the metric spark-plug hole, the diameter of the diaphragm is limited to $\frac{1}{2}$ in.

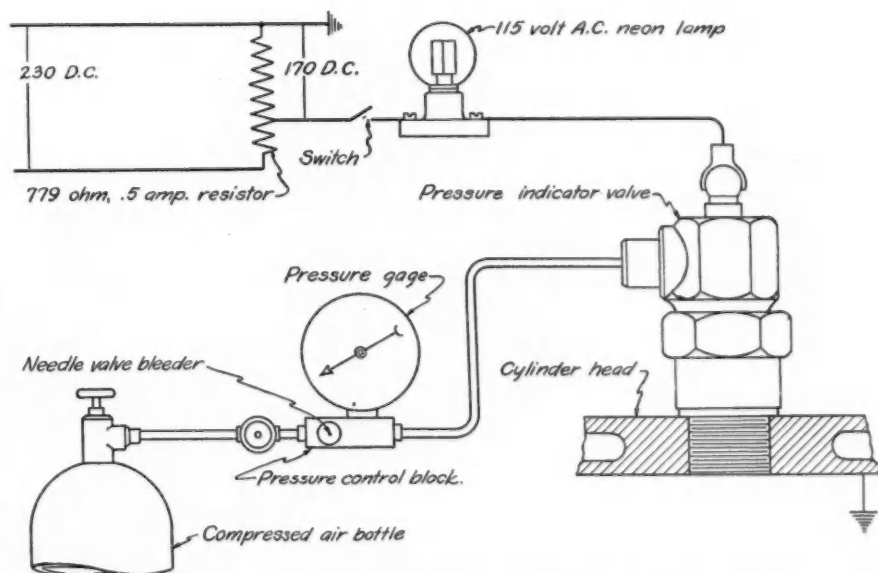


Diagram of pressure and electric connections

This introduces an error of less than 1 per cent over the normal working range. The error for the 0.008-in. is about 2 per cent at 1500 lb. p. sq. in.

The balancing pressure is provided from an air bottle connected to the pressure element through a control block on which a Bourdon spring gage is mounted. A small neon lamp is mounted directly above the gage. For a multiple-cylinder engine a bank of these neon lamps are used and readings of the maximum pressures in all cylinders are taken simultaneously.

It is very important that the diaphragm be assembled in the pressure element with the proper clearance between it and the inner support; with this clearance less than 0.0005 in. and the correct thickness of diaphragm, contact between the diaphragm and the inner support will be effected by a pressure which is within the limit of error of commercial Bourdon spring gages of a range suitable for measuring the pressure.

In measuring compression pressures during motoring

runs, variations in pressure from cycle to cycle are so slight that only one measurement need be made. The controlled air pressure is raised gradually, and at the point where the neon lamp stops flickering and goes out the gage is read. The more slowly the pressure is raised, the more accurate the reading will be. When the engine is running under power, maximum cylinder pressures usually vary somewhat from cycle to cycle, and they are therefore expressed as a pressure range rather than as a definite pressure. The controlled pressure is raised until flickering of the lamp loses its regularity, when one reading is taken; the pressure is then increased until the lamp ceases flickering entirely, and another reading is taken.

This indicator shows almost instantly any variations in engine-operating conditions through their effect on the maximum cylinder pressure, and has been found to give more consistent results than any other instrument for the determination of maximum cylinder pressures.

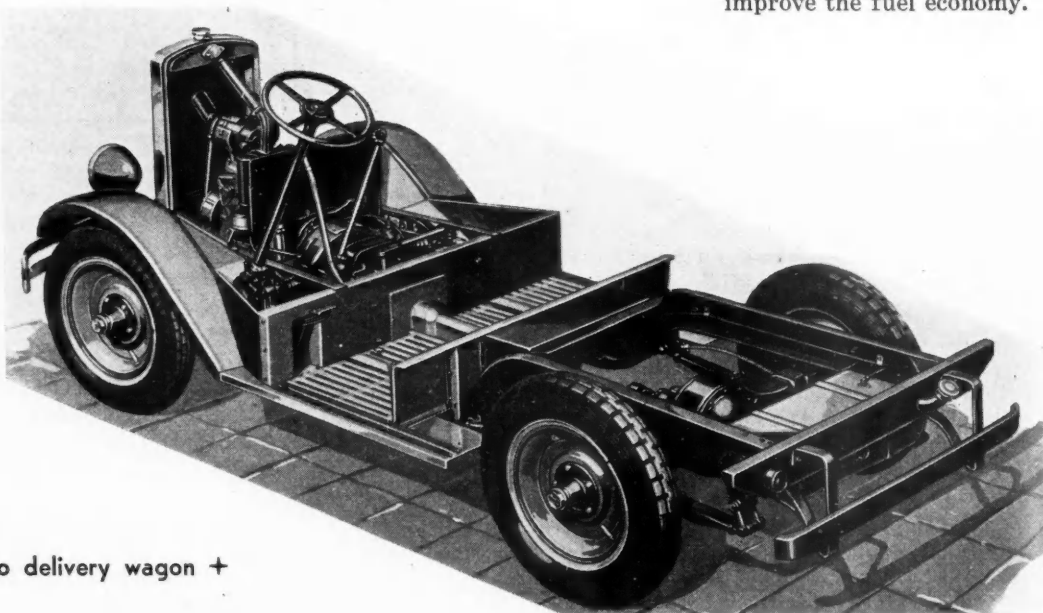
DiVco Model H Engine Has Economizing Manifold

A NEW specialized delivery vehicle known as the DiVco Model H has been announced by the DiVco Detroit Corp., Detroit. It incorporates a one-piece drop-frame construction with low aisle and is specially designed for frequent-stop delivery. The one-piece drop frame is made of $\frac{1}{4}$ -in. stock and has a channel 6 in. deep and with 2 in. flange. The low free aisle permits the driver to pass through from either side with the driver's collapsible seat in position. There is a small tunnel $4\frac{1}{2}$ in. high covering the propeller shaft.

This new DiVco may be driven in either a standing or sitting position, there being accelerators on the floor, the steering post and the shifting lever. It has the combination

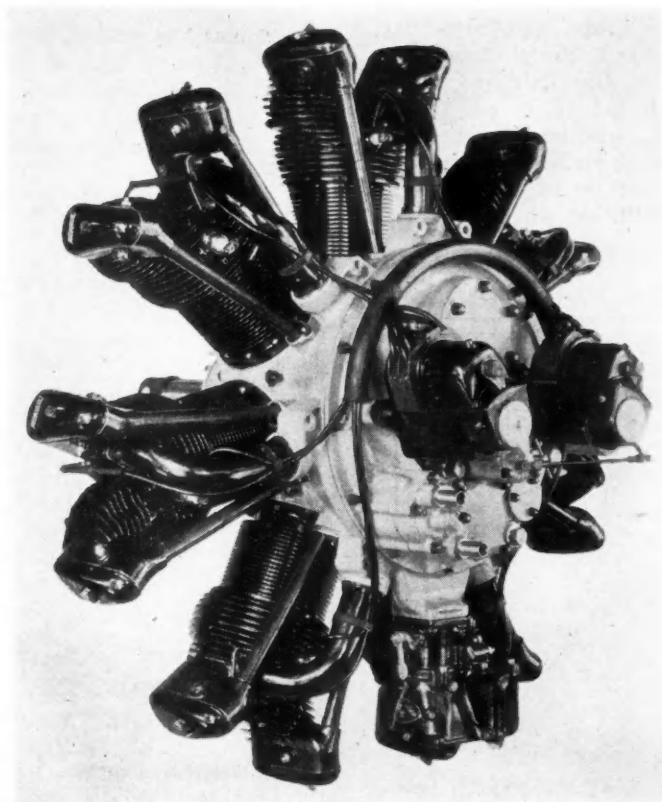
clutch and brake pedal with automatic brake lock which has distinguished previous DiVco models. The powerplant incorporates a four-cylinder Continental engine. According to John Nicol, president and general manager of the DiVco Detroit Corp., the engine of a milk delivery wagon is idling 65 per cent of the time, hence the fuel mileage will be very low unless special precautions are taken to cut down the consumption of the engine while idling, and the Continental engine used on the

DiVco is said to have a special manifold tending to improve the fuel economy.



Chassis of DiVco delivery wagon +

New Crankcase Reduces Weight of Continental Aircraft Engine



A new ring type exhaust manifold carries the gases below the fuselage + + +

A NUMBER of changes, the most important of which probably is a 10 per cent reduction in weight, have been made recently in the Continental A-70, 165 hp. seven-cylinder radial air-cooled engine. In view of these changes a new approved type certificate has been applied for, and tests will be run shortly for the Department of Commerce.

Most of the weight saving has been obtained by redesigning the crankcase and especially the accessory case. The latter has been shortened up approximately $3 \frac{7}{16}$ in. The old-style cross shaft with its helical gear drive has been eliminated and straight spur-gear-tooth drives have been provided instead for the oil and fuel pumps. Other accessories also have been redesigned to reduce weight. For instance, the long intake pipe which formerly carried the carburetor and connected to the manifold passage cast into the main crankcase, has been eliminated, by extending the manifold to the bottom of the case where it terminates in a short riser integral with the case, to which bolts the carburetor. This is effective in raising the carburetor so that even if heater equipment is used, there is still sufficient clearance to permit the use of the NACA cowl or Townend ring.

A new ring-type exhaust manifold has its outlet on the right-hand side of the engine so that propeller wash carries the gases downward below the fuselage. The

pipes connecting to the cylinders fit into tangential branches of the exhaust ring with slip joints. Carburetor air heater and cleaner units are included in the manifold assembly, and an aluminum cowl nose is furnished, with buttons for attaching the engine cowl.

Push rods are light steel tubes with hardened steel ends welded in place and ground to length, it being desired to have a lower expansion at this point than would be the case if duralumin push rods were used. The design in this respect is similar to that on former A-70 engines.

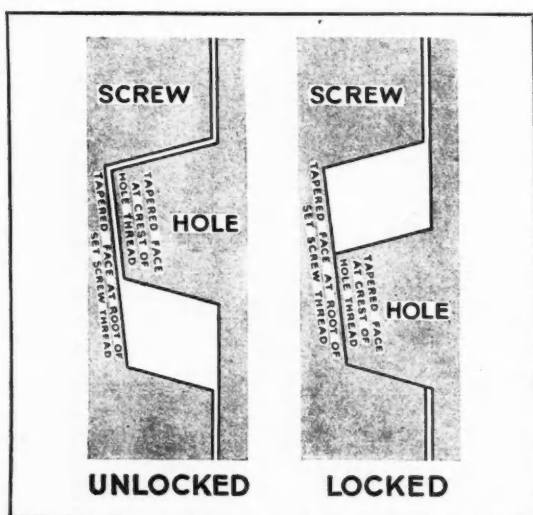
A change in the cylinder head is found in the adoption of new type rocker box covers. These covers are of the quick detachable type, do not require safety lockwires and are removed by turning a small lever on top of the cover 90 deg. from the locked position. The lever operates a flat spring cam which is forced under spring tension into grooves in the rocker box studs. The design has been adopted primarily for ease of servicing, as in checking valve timing.

The dry weight of the second series A-70 Continental engine is stated to be 390 lb., including magneto and carburetor, or approximately $2 \frac{1}{3}$ lb. per hp. Including the exhaust manifold and additional standard equipment the weight is 415 lb. This represents a reduction of 42 lb. from the former series.

NEW DEVELOPMENTS—AUTOMOTIVE

Bristo-Dardelet Locking Set Screws

BRISTO-DARDELET cap screws and safety set screws are now being manufactured by the Bristol Co., Waterbury, Conn., under license from the Dardelet Threadlock Corp., 120 Broadway, New York. The Dardelet is a special thread having an inclined bottom on the male and an inclined crest on the female thread, in addition to which the thread itself is considerably narrower than the space between threads. Locking results from the wedging action of the tapering surfaces, which come in contact when the screw is being set.



When a Dardelet cap or set screw is being screwed in, the threads are in the unlocked position and the screw turns freely until it is seated on the work. Then a partial turn of the wrench causes the screw to turn without advancing, so that the bottom surface of the male thread moves directly across the crest of the female thread until the flanks of the threads are in contact. The screw is then turned farther with the wrench until it is set and the proper holding pressure is attained. It will remain in that position.

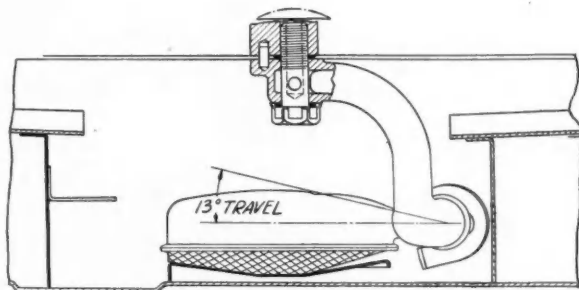
If it is necessary to remove the screw, a reverse turn of the wrench will readily unlock it, and it will again turn freely. These screws can be used repeatedly.

Float-o Variable-Level Oil Intake

AN improved inlet for the oil pump of automobile-engine lubricating systems has been developed by Taylor Sales Engineering Corp. of Elkhart, Ind. The object of this intake, which is being marketed under the trade name Float-o, is to cause the pump to draw oil from near the surface of the crankcase supply.

It is stated that oil, water, and solids in the

crankcase will invariably settle into three well-defined layers. With an intake near the bottom of the case, the solid particles and the water will be drawn into the lubrication system first. The Float-o intake prevents this, by keeping the intake near the level of the oil supply in the crankcase.



Special advantages are said to result from the use of this oil intake in winter time. If there is any water in the crankcase it may freeze up, which would be likely to completely prevent circulation if the inlet were near the bottom. Moreover, it is usual to use rather light oils in the engine during the winter months, to make sure that the oil will flow to the pump on extremely cold mornings. With the Float-o intake, it is claimed, a heavier-bodied oil can be used.

Odenkirk New Type of Wheel

AN illustration of the new Odenkirk wheel to be produced by the recently organized Odenkirk Motor Wheel Corp. of Cleveland, Ohio, is shown herewith. The model here illustrated is of the pressed spoke type, but the wheel can also be made of wire or disk type, we are informed. The feature of the wheel is that one-half of the



rim is removable and permits of easy removal and replacement of tires. The inside of the rim tapers toward the center, so the tire slides off easily. The demountable half of the rim fits the

PARTS, ACCESSORIES AND PRODUCTION TOOLS

protruding wheel bolts and is fastened with nuts.

With the new wheel no spare wheels or tires are carried, the tire being repaired when a defect occurs. After the free half of the rim has been removed, the tire is slipped off and repaired, and it is then slipped on again and the nuts are tightened, whereupon the tire is inflated. The first wheels of this type have been in service since March last, we are informed. Production on these wheels is expected to begin in March or April.

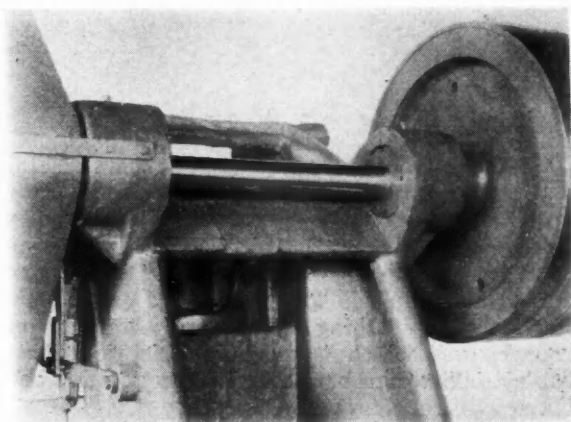
Speed Reducer With Shafts at Both Ends

THE Production Equipment Co., Cleveland, Ohio, announce that any of the motorized speed reducers manufactured by them can be supplied with shafts extended at both ends of unit.

For many applications this is particularly desirable. The motorized speed reducer consists of standard or special characteristic polyphase induction motors, mounted integral with spur, helical, planetary or bevel gears retained in an oil-tight housing. The low speed shaft, from the speed reducer end, provides a speed as low as 20 r.p.m. or may be supplied with a speed of as high as 875 r.p.m. The opposite shaft, direct from the motor, provides high speed of standard polyphase motor speeds of 1800, 1200, 900 or 720 r.p.m. For certain applications the unit can be supplied with speed reducers at both ends thereby giving opposite shaft speeds alike or different from each other.

Federal Presses With Roller Bearing Gear Bracket

ANOTHER step in modernizing press design has been made by the Federal Press Co., Elkhart, Ind., with the adoption of a roller bearing back-gear bracket. An important feature is



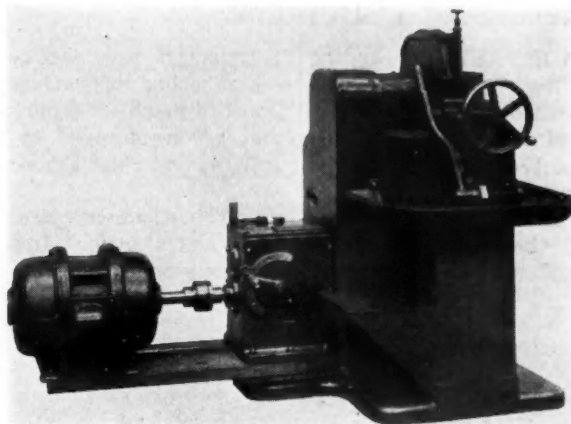
Automotive Industries

that this bracket is cast integrally with the frame thus eliminating the former loose babbitted construction.

The Timken roller bearings are built into adjustable housings so that they can be meshed properly, and since the brackets are a part of the frame, there is no chance of getting out of line. There is also a material decrease in the power consumption. Wear is readily taken up and is minimized through the use of Timken roller bearings and the fact that there are four bearings used in the job, two in each housing.

Cochrane-Bly Cut-off Machine

A HIGH-SPEED cut-off machine with a capacity of 4 in. diameter stock, adapted to use both an abrasive wheel and saw, has been placed on the market by the Cochrane-Bly Co., Rochester, N. Y. This machine, their No. 21, is driven through a 4-speed gearbox having hardened



nickel steel gears running in oil and shafts mounted in Timken roller bearings. This gearbox provides four spindle speeds varying from 2400 to 3600 r.p.m. which give a periphery speed to the 16 in. abrasive wheel of 10,000 to 15,000 ft. per minute. The machine can be speeded so as to compensate for the wear in the wheel diameter.

The machine is driven from the speed box to the spindle by multiple V-belts, and an idler pulley which compensates for variations in centers of pulleys due to carriage movement, and to maintain a uniform belt tension. It is designed for either wet or dry cutting, and is provided with a pump which delivers a stream of coolant or lubricant on the wheel or saw blade. The manufacturers claim that the wear of the wheel when cutting wet is just half the wear when cutting dry for a given number of cuts at the same rate.

Motor drive is 5-15 hp. floor space; belt drive, 30 x 40 in.; motor drive with speed box, 38 x 68 in. Net weight, belt drive, 1500 lb., approx.

March 21, 1931

NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools

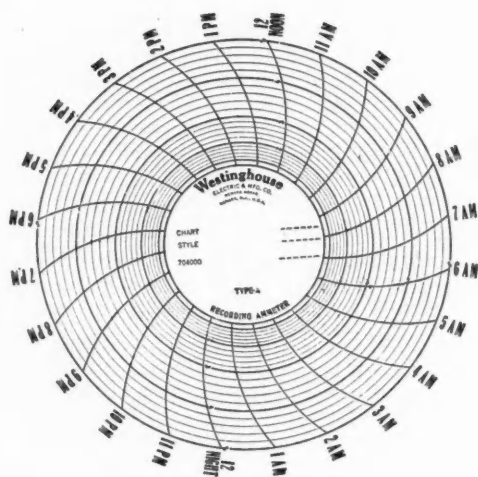
Bunting Bronze Bushings of Extra Hardness

A NEW cast bronze bearing bushing of extra hardness has been announced by the Bunting Brass & Bronze Co., Toledo, Ohio. These bushings are recommended by the makers for such automobile applications as spring-eye, piston-pin and transmission-countershaft bushings. The bronze is of the leaded type and is said to assure a low coefficient of friction, in addition to the long life guaranteed by its hardness. It is the result of the research work carried out by the Bunting Co. during the past several years, to which repeated references have been made in these columns.

Westinghouse Portable Recording Instruments

PORTABLE recording instruments for checking power consumption and other operating features of electrical equipment in machine shops, and other parts of the plant, are announced by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

These new type A recording instruments are of the direct acting circular chart type. Intended principally for alternating-current, they



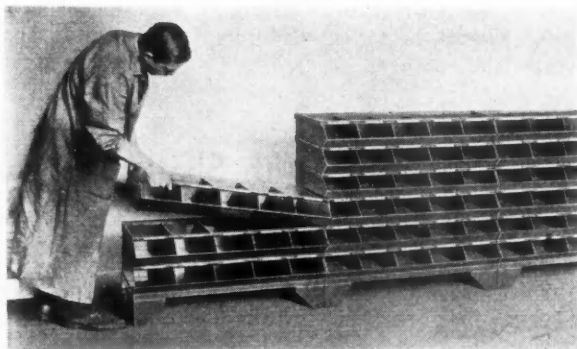
are also applicable to certain direct-current services. They are made as ammeters and voltmeters for either switchboard mounting or portable use.

The machine shop with electrical drive, either shaft or individual machine, can use type A portable recording instruments on the more important machines to check performance and determine the most economical use of the equipment, loading of motors, time of starting in the

morning or after lunch hour, time of quitting, loss of time, and power required for different operations or depth of cuts.

Simplex Sectional Stock Bins

SECTIONAL stock bins providing a wide degree of flexibility in arrangement and size have been developed by the Simplex Tool Co., Woonsocket, R. I. Units consist of a standard base and individual sections which are nested



deeply into each other. Sections are made in four sizes ranging in depth from 12 to 20 in., and in height from 4 to 9½ in., all 37 in. wide.

The flexibility of this arrangement makes it adaptable not only for permanent installations but for temporary stock rooms which are often set up for special jobs.

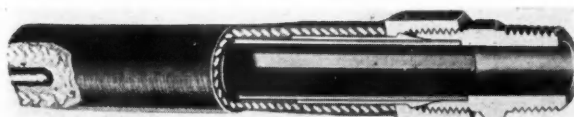
Rustless Wire Rope

WIRE rope of rustless steel (Nirosta) is now being manufactured by the Hazard Wire Rope Co., Wilkes-Barre, Pa. The rope resists the action of many chemicals and, therefore, will probably find its chief application in the chemical industries. It also resists the action of sea water and tanning liquor and there is a possibility that it may be used in automobile production as well as for equipment in certain departments of automobile factories. This new rustless wire rope, which is sold under the trade name, "Hazard Korodless," is preformed, each wire and each strand being given in advance the exact helical form which it has in the completed rope. This is said to lessen the fatigue to which the rope is subjected.

Rubber Covered Metal Tubing

A NEW design of rubber covered metal tubing for gasoline and oil in aircraft installations will be offered to the trade shortly by the Sky Specialties Corp., of Detroit. Designed to minimize the chance of powerplant stoppage and forced landings due to the fuel and oil "plumbing," the new tubing is made of aluminum or copper, over which is vulcanized fabric rubber tubing, claimed to be impervious to gasoline and oil.

A special connection has been worked out for this tubing, consisting of a sleeve with a tapered end, and an internally threaded sleeve, which are assembled on the tubing before vulcanizing the rubber in place. The inner sleeve with the tapered end is slipped back over the metal tubing until about one inch of tubing projects beyond the end. This sleeve carries with it the outer, threaded unit. When the connecting nipple is screwed in, the tapered end of the inner sleeve acts as a wedge to insure tightness.

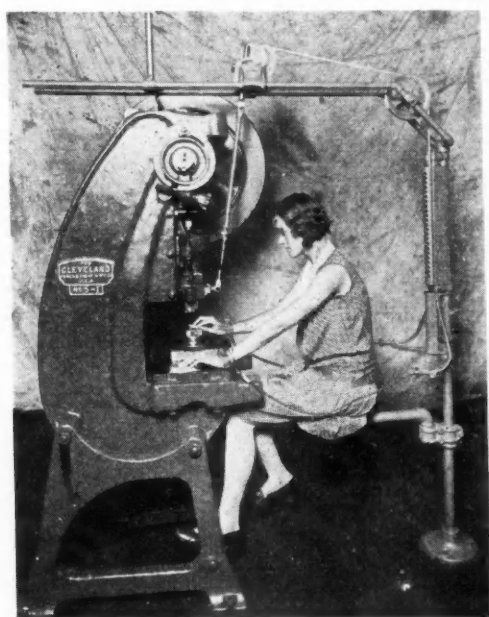


The purpose of the outer rubber covering is to prevent complete failure of the line in case of cracking from vibration or breakage of the metal part of the tubing during flight. It is claimed that weight is not materially increased.

Posson Safety Device

IMPROVED models of the Posson Positive safety device for power presses recently were announced by the Positive Safety Mfg. Co., Cleveland, Ohio. Outstanding features of this device include: visible cord and cable assembly, bringing all working parts into plain view; adjustable ram-connection, operating from below any possible breaking point; and, a frame attachment adjustable to both the upright and inclined position of the press.

A special hand-strap is attached to the operator's wrist and passes under his thumb. The strap is attached by a quick-release safety clip



to flexible cables. These pull-back cables extend upward through tubes supported on brackets attached to the main column, and are attached to

NEW DEVELOPMENTS

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a slide that operates up and down with the stroke of the press. A steel cable attaches the slide to a rocker arm connecting to the ram of the press. In operation the ram, on its downward stroke, pulls back the cables and definitely removes the operator's hands from the danger zone. Adjustment of the pull-back may be made for any press operation. The amount of free cable, the distance of pull-back, and the speed of withdrawal may be set exactly to fit the job. The apparatus then is locked in adjustment by the foreman.

A pull-out multiplier has been designed for use on short-stroke presses or for jobs which require a quick withdrawal. It is geared so that from three to five inches of pull-out is allowed on the first half inch of the downward stroke of the ram. The acceleration of pull-out results from the winding of the cable on the cam.

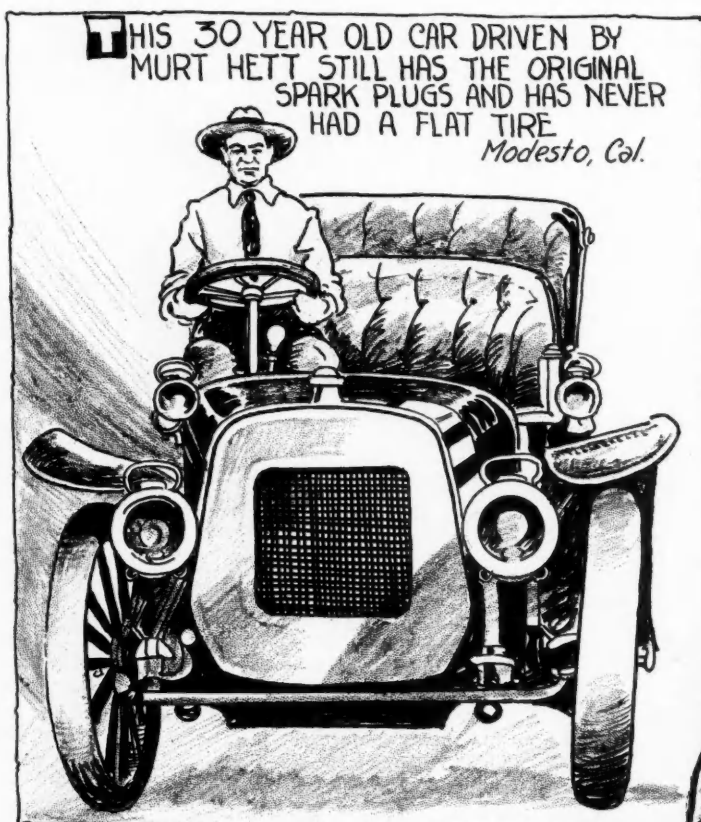
These improved features are incorporated in both the floor and ceiling-attached guards. The special pull-out multiplier is optional equipment available with either type. The standard designs are adaptable to practically all power presses used in industry.

Codite, a New Insulator

A NEW insulating material known as Codite, somewhat related to vulcanized fiber, has been developed by the Continental-Diamond Fibre Co. of Newark, Del. It has greater flexibility, greater plasticity, higher electrical insulating properties and greater mechanical strength than vulcanized fiber.

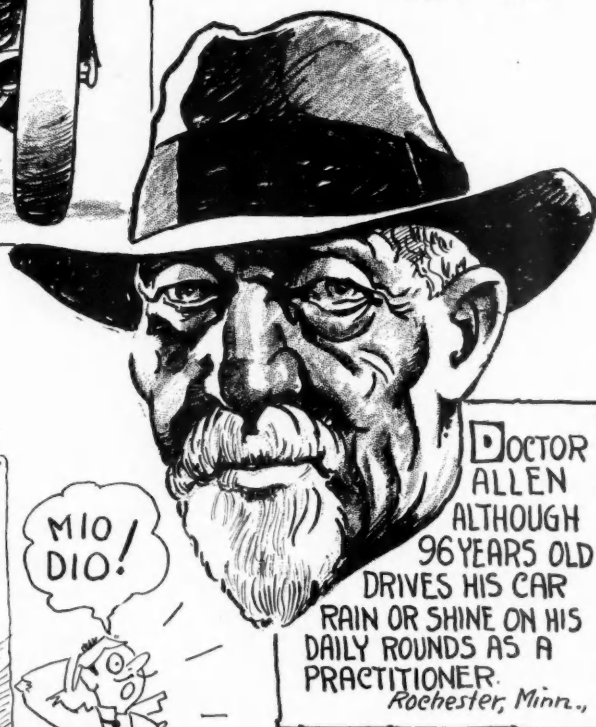
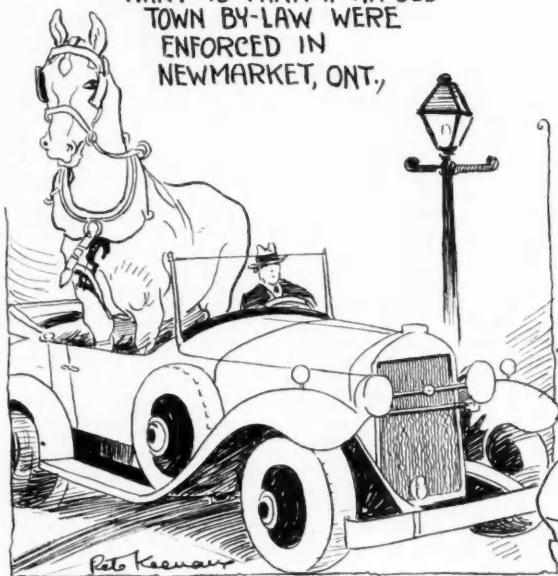
Codite is a hard, tough, horny, somewhat translucent and also somewhat thermoplastic material. It can be machined easily and accurately, and its surface is capable of taking a high polish. It has in a high degree the property of flowing under pressure, as in a die, and this property is materially increased by the application of dry heat. Extruded washers, for example, have been fabricated with a shank measuring 0.070 in. and a flange of only 0.023 in. Tubes may be expanded in diameter or spun or pressed in a heated die. In the case of sheets, strips 0.050 in. thick may be safely rolled down to 0.028 in. in thickness. Such strips, when heated, may be bent double without cracking. The material sets in whatever form it is molded and does not become brittle under a reasonable application of heat, nor does it warp appreciably after setting. A moisture content of from 3 per cent to 6 per cent is conducive to flexibility under heat, although satisfactory results may be obtained with the material dry. It does not have to be moistened with wet steam before forming, as is customary with vulcanized fiber. The hygroscopic properties of Codite are about the same as those of vulcanized fiber.

Automotive Oddities—By Pete Keenan



An oil company with unknown backers drilled for oil in New Jersey for ten years, squandered \$3,000,000 then moved to Texas
Oct 1st 1930.

MOTORISTS WOULD HAVE TO CARRY A HORSE WITH THEM WHEN THEY WANT TO PARK IF AN OLD TOWN BY-LAW WERE ENFORCED IN NEWMARKET, ONT.,



DOCTOR ALLEN
ALTHOUGH 96 YEARS OLD DRIVES HIS CAR RAIN OR SHINE ON HIS DAILY ROUNDS AS A PRACTITIONER.
Rochester, Minn.,

MIO!
DIO!

A Mexican labor attache was hit by a car in New York and lost his ability to speak English, this puzzled doctors as he is a Cornell graduate. His Spanish is perfect. *Feb 1931.*



NEWS OF THE INDUSTRY

Swayne Cites Burden on Trucks

**Says Taxes on Rails
for Roads Are
Not 'Serious Item**

NEW YORK, March 18—Speaking today at the meeting of the Traffic Club of New York, Alfred H. Swayne, vice-president of General Motors Corp., pointed out that motor trucks and buses bear a large and adequate share of the burden of providing highways, while railroad contributions are not large enough to constitute a burden of any importance to them.

Mr. Swayne explained the attitude of the motor industry in the controversy created by the demand of railroad executives for legislation restricting transportation agencies which they regard as competitive with them. The railroad point of view had been presented at the Traffic Club in January by John J. Pelley, president of the New York, New Haven & Hartford Railroad.

The motor industry, Mr. Swayne pointed out, has always favored co-operation rather than unrestricted competition among transportation agencies. This industry, he said, is in full agreement with railroads and bus operators in their desire for Federal regulation of interstate bus traffic, but is strongly opposed to such regulation of trucks which is a much more complicated problem. Two-thirds of the billion and one-half dollars expended for construction and maintenance of highways during 1930 was collected in taxes from motor vehicle users alone, Mr. Swayne pointed out. Special motor vehicle taxes have increased more than 500 per cent during the period from 1921 to 1929.

Graham Promotes Valpey

DETROIT, March 19—F. R. Valpey, who has been general sales manager of the Graham-Paige Motors Corp. since 1928, has been appointed a vice-president of the corporation. He is to be succeeded as general sales manager by C. W. Matheson, a sales executive of long experience in the industry who joined the company last autumn. The announcement was made by Robert Graham, executive vice-president of the Graham-Paige Motors Corp.

New Ford Plant Opens

SALT LAKE CITY, March 19—The Ford Motor Co. opened here this week a new commercial car and truck assembly plant with a capacity of 300 units a month. It is equipped to turn out 53 body types in 38 color options. Fifty workers have been added to the payroll.

The News Trailer

By Herbert Hosking

K. T. Keller, v.p. and g.m. of Chrysler Motor Corp., returned from a brief vacation on the 14th * * * Auburn is not looking for a Canadian plant right now, thank you * * * Ford will not have the big plant at Dallas, Tex., that some of the Texas newspapers have been screaming about * * * Harry Hartz may have another crack for honors in the "500" this year * * * Dr. T. A. Harris, pres. of Willys of Canada and Massey-Harris, spoke at Canadian Section, S.A.E., on the 18th . . . he was first Canadian member of S.A.E., according to Warren Hastings, secretary * * * B. F. Goodrich Co. is working hard to fill an order for rubber toys as a result of a radio broadcast offering them as souvenirs * * * Moslem pilgrims to Mecca traveled in American automobiles this year, according to the Automotive Division, D. of C. . . 8713 of them rode in 793 carloads from Jedda to El Medinah, price per pilgrim, 9½ Egyptian pounds . . . this will rise to 14 pounds during the zenith of the season following the good old Miamerican custom.

G.M. Deliveries Reported

NEW YORK, March 17—General Motors dealers delivered to consumers in the United States during February 68,976 cars. This compares with 61,566 cars delivered during January, and with 88,742 cars delivered during February a year ago.

Sales by the divisions to dealers in the United States were 80,373, as compared with 76,681 in January, and with 110,904 in February, 1930.

Total sales to dealers, including Canadian and overseas shipments, were 96,003 during February, as compared with 89,349 in January and with 126,196 in February of last year.

The excess of sales to dealers over sales to consumers indicates a normal seasonal building up of dealer inventories.

D.A.C. Sales Gain

DETROIT, March 18—Gross monthly sales of Detroit Aircraft Corp. this year are 30 per cent greater than the record of last year. Gross sales of \$60,300 for first two weeks of March were reported.

Rails Conclude I. C. C. Testimony

**Coordination Hearings
Bring Out Effect of Motor
Vehicle Competition**

WASHINGTON, March 18—That railroads must coordinate their services with those of bus and truck lines if they are to maintain their present position in the transportation field was the keynote of hearings held before the Interstate Commerce Commission during the past 2 weeks. The hearings, conducted by Commissioner Ezra Brainerd, Jr., and Examiner Leo J. Flynn, were the last of a series of similar hearings held throughout various parts of the country during the winter, and were held for the purpose of determining the "propriety and legality" of motor vehicle operation by the railroads.

Although many diverging views were expressed as to the extent of regulation that should be applied to highway transportation, contention generally was drawn up along three distinct battle-lines: representatives of the automobile industry, while not objecting to bus regulation, vigorously opposed any regulation of trucking operations; railroads which operate in coordination with motor vehicles favored limited regulation of both types of highway carriers, while railroads which operate strictly in competition with motor vehicles asked for strict regulation of both buses and trucks in regard to rates, routes, tariffs, schedules and other operating items.

Testimony of railroad witnesses showed convincingly the inroads that private automobiles and bus and truck lines have made upon steam carrier revenues. "The effect upon rail carriers," C. S. Duncan, of the Association of Railway Executives, told the commission, "illustrated by the decline in passenger revenues of \$414,000,000 in 1929 as compared with 1920, is indicative of the seriousness of the present situation. A greater part of this loss has been due to the private passenger automobile. The railroads likewise suffered severe losses of freight revenues to highway transportation during the ten years."

In order to offset motor competition, railroads have lowered rates and bettered their service, but the results for the most part have not been satisfactory. Several plans for effective coordination were presented by railroad witnesses, one of which, advanced by the New York Central, contemplated the extension of container service to all parts of the country.

Under this method, trucks would transport the containers at terminal points, while the railroads would perform the long haul. Another plan, suggested by the Pennsylvania Railroad, provided for removable truck bodies, which would be removed from the chassis at the origin points, and replaced on another truck body at the destination. Substantial savings in both time and money would result from either one of these methods, it was declared.

Men of the Industry and What They Are Doing

Haynes Broadens Duties

Personal charge of all departments of manufacture of H. H. Franklin Mfg. Co. was assumed Saturday, March 14, by Frederick J. Haynes, vice-president and general manager, following the resignation of L. J. Purdy, former factory manager.

Appointment of Frank J. Leyerle as his immediate assistant in the direction of factory operations was announced by Mr. Haynes. Mr. Leyerle, who previously headed the service and spare parts division of the company, has been connected with Franklin for 10 years.

No change in his contacts as general manager with other departments of the business will be occasioned by this new production line-up, Mr. Haynes said.

Autocar Sales Elects Three

Three Autocar district managers were made vice-presidents and elected to membership on the board of directors of the Autocar Sales & Service Co. at the annual meeting. The newly elected officers and directors are: Frank D. Wait, district manager in the metropolitan New York area; Charles E. Doling, district manager in the Philadelphia area, and Edward F. Coogan, district manager in the Boston area.

The Autocar Sales & Service Co. is a subsidiary of the Autocar Co., Ardmore, Pa.

Olds Names Collins

P. A. Collins has been appointed experimental engineer of Olds Motor Works, division of General Motors Corp., according to an announcement made today by C. L. McCuen, director of engineering.

Mr. Collins goes to the Olds Motor Works from the Muncie Products division of General Motors Corp., where he has served in an executive capacity since June, 1930. Prior to that time he was sales engineer for the Bendix-Stromberg Corp.

Kelly Joins Thermoid

John H. Kelly, former president of the Hewitt Rubber Co. and vice-president in charge of sales of the Republic Rubber Co., has joined the staff of the Thermoid Rubber Co., Trenton, N. J.

Ashman Heads Relay

O. J. Ashman has been elected president and general manager of Relay Motors Corp., succeeding G. L. Gillam, resigned. Mr. Ashman has had a broad experience as a manufacturers'

representative, coming to Relay from the Standard Equipment Co., Cleveland.

The company is planning to embark upon a broad expansion program and reports that during the past two weeks orders have been coming in at a much greater rate than that noted during the earlier weeks of the year.

Austin Elects Gill

The election of R. O. Gill as president and general manager of the American Austin Car Co. has been announced by Elias Ritts, chairman of the executive committee. Mr. Gill has assumed active charge of the plant and will take steps immediately to expand the organization in accordance with increased marketing plans for the bantam Austin car.

Ford Promotes Atcheson

Frank A. Atcheson, manager of the Ford Motor Co.'s branch plant at Charlotte, N. C., has been transferred to St. Louis and promoted to the position of manager of the company's plant there. He has been connected with the Ford company 18 years. He came to Charlotte in 1923 from Dallas, Tex., where he was for six years assistant manager of the branch there.

Durant Names Triphagen

Clarence A. Triphagen, former sales manager of the Reo Motor Car Co., has been appointed general sales manager of the Durant Motors, Hal W. Alger, general manager, has announced. Mr. Triphagen took over his new position March 16. Over 400 dealers have been added by Durant since the first of January, Mr. Alger said, and more are being added daily.

Emrich Joins Jones-Dabney

Fred Emrich, for many years general industrial sales manager for the Glidden Co., of Cleveland, became general sales manager of the Jones-Dabney Co., Louisville, manufacturers of industrial lacquers, varnishes and enamels, effective March 12.

Cadillac Names Holmes

Edward Holmes, former sales manager of Windsor Motors, Ltd., Windsor, Ont., has been appointed factory branch manager of the Cadillac Motor Car Co. of Canada, Montreal.

Studebaker Names Funston

I. J. Funston has been named Detroit district sales manager for the Studebaker Corp., succeeding Clair R. Savage, who has been transferred to Philadelphia.

Sears, Roebuck Sells Automobile Insurance

Will Seek Rural
Business by Mail

CHICAGO, March 16—Immediate purpose of Sears, Roebuck & Co. in going into the insurance field is to offer automobile insurance to car owners in the small towns and rural districts where most of Sears mail-order customers live and where it is estimated that only one out of five cars carries any insurance at present for the reason that such territory is not particularly attractive to insurance agents, it was stated yesterday.

Sears' insurance business will be carried on through the All-State Insurance Co., a new subsidiary corporation having initial capital of \$350,000 and surplus of the same amount. Capital is all owned by Sears and capital and surplus are fully paid in by the same company. No organization charge was made against the new subsidiary.

All-State Insurance Co. is at present chartered and licensed to operate only in Illinois, but does not need to be licensed in other states as all of its selling will be done by direct mail. No policies will be sold through the company's retail stores and its present insurance setup for the coverage of its own properties against fire, theft, burglary, etc., will not be disturbed in any way.

Ohio Employment Declines

COLUMBUS, OHIO, March 16—According to a recent bulletin of the Bureau of Business Research of Ohio State University, employment in the automobile and automotive parts industries in Ohio in February declined 4 per cent from January levels and 19 per cent from the records of February, 1930.

Outboard Adds Model

MILWAUKEE, March 16—Outboard Motors Corp. is introducing a new light twin-cylinder rowboat engine to sell under \$100, compared with \$145 for the lowest priced 1930 model, and also is adding to its line a small four-cylinder engine.

Bigge Heads Panyard

D. M. Bigge, formerly vice-president and general manager of the Panyard Piston Ring Co., Muskegon, has been made president and general manager. As president, he succeeds P. P. Schnorrbach, who will continue as a large stockholder of the company.

Smith Joins Oakland

Earl H. Smith, formerly experimental engineer for Oldsmobile, has joined the Oakland staff in an engineering capacity. Mr. Smith joined Olds in 1925 as chief inspector, becoming experimental engineer in 1927.

Merrill on Committee

Thomas S. Merrill, secretary of the General Motors Corp., is one of the leaders of a committee that is raising funds to support the work of the Detroit Board of Commerce.

Warner Aircraft Reports 1930 Loss

Mayo and Holley
Elected Directors

DETROIT, March 18—William B. Mayo, chief engineer, Ford Motor Co., and George Holley, president, Holley Carburetor Co., were elected directors of the Warner Aircraft Co. at a stockholders meeting yesterday, succeeding Charles B. Bohn, president of the Bohn Aluminum and Brass Corp., and C. W. Eggenweiler, vice-president, Bohn Aluminum, resigned.

W. J. Jarvie was elected secretary and treasurer, and Edward N. Hartwick, formerly vice-president and treasurer, was elected a vice-president. Other officers were reelected. The company reports net operating loss last year of \$129,194 after charges, excluding proceeds of \$44,936 from sales of donated capital stock, compared with net loss of \$39,966 during the previous year. Current assets \$454,615, against liabilities of \$21,200—ratio of 21 to 1. William O. Warner, president, states business for first quarter over 100 per cent ahead of the volume for the same period last year and that the outlook is promising in view of new contacts established.

Rumely Lists New Stock

NEW YORK, March 16—Advance-Rumely Corp. has secured listing on the New York Stock Exchange of 277,600 shares of common stock of no par value. This stock is to be exchanged for existing stock of Advance-Rumely Co. and of Indiana Farm Machinery Corp., on the basis of one share of new stock for five shares of common stock of the Advance-Rumely Co., two shares of new stock for each share preferred stock in the Advance-Rumely Co., and one share of new stock for each of Indiana Farm Machinery Corp. This new listing is made to cover the merger effected in February between Advance-Rumely and Indiana Farm Machinery Corp.

Ford of Canada May Build

MONTREAL, March 16—Ford Motor Co. of Canada, Ltd., it is understood will build an assembly plant at or near Vancouver, B. C. Burnaby is the name of the town mentioned. This was announced by W. R. Campbell, president of the company, now in Vancouver on an extended trip, accompanied by Bryce R. Muir, sales manager; M. M. Smith in charge of sales promotion, and A. S. Ellis, service manager. Whether or not construction of the new assembly plant will be undertaken this year depends largely on conditions later in the season, it was intimated. The new plant will not be a factor in the Ford Motor of Canada, Ltd., export business.

Warner Business Gains

CHICAGO, March 16—February business of the Warner Gear Co., Muncie, Ind., subsidiary of Borg-Warner Corp., was 11 per cent above the January volume and approximately 8 per cent more than in February, 1930. Sales of the service parts division of the company during February were almost twice as great as in January.

Fairbanks Morse Reports

CHICAGO, March 16—Net sales of Fairbanks, Morse & Co. and subsidiaries, for the year 1930 amounted to \$25,146,049, as compared with \$31,504,908. Net profits of the company, which has become the largest manufacturer of Diesel engines in the United States, in 1930 were \$821,612, equal to 93 cents per share on the 368,871 shares of common stock outstanding. This compares with net income of \$2,348,672 or \$5.05 a share on the 368,977 shares of common stock outstanding in 1929.

The consolidated balance sheet shows a decline in total assets to \$37,955,219 from \$40,799,963. A strong cash position is being maintained, total current assets amounting to \$21,899,894, as against total current liabilities of \$2,138,609. Inventories were reduced to \$662,918 during 1930, a drop of \$1,595,103, as compared with a year ago.

Advertising Holds Up

NEW YORK, March 18—The automotive industry spent \$133,883 for radio advertising in January, as compared with \$145,264 for the same month last year, according to a compilation made by Dorrance, Sullivan & Co., Inc., from national advertising records. The decrease for radio advertising of all industries was 32 per cent, although the automotive accounts dropped only 8.4 per cent during January as compared with January of last year.

National magazine advertising of automotive concerns showed practically no decrease in February, 1931, as compared with the same month last year, although national farm magazine advertising dropped about 28.5 per cent last month as compared with the 1930 figures.

Rover Has New Midget

LONDON, Feb. 26 (by mail)—It is announced today that the Rover Motor Co., Coventry, has in production, with deliveries to commence near the end of April, a midget four-passenger car to sell at £85, making it the lowest priced British four-wheeled four-passenger model yet offered.

Details of the new Rover have not been announced yet, apart from the fact that it has independent springing, but there is reason for believing that it has a two-cylinder, air-cooled engine. A speed of 50 m.p.h. is claimed and 50 miles per imperial gal. Test cars have averaged 38 m.p.h.

Color Black Popular As Automobile Finish

Brown Begins Upswing
After Being Dormant

NEW YORK, March 18—The color black has regained its lead as the most popular color for automobile finishing, according to the *Automobile Color Index*, published by the Duco Color Advisory Service. The 6 leading color families with their relative position in February, 1931, were as follows:

1. Black ...	151	4. Green ...	96
2. Blue ...	124	5. Maroon ...	80
3. Brown ..	96	6. Grey	39

The Index notes that brown, for the first time since last August, is on the up-grade. Gray has also demonstrated extraordinary activity of late. In February of 1930 brown was in the leading position with an index of 160. The wide use of blue for feminine fashions in the advance spring styles for 1931 would indicate that the position of the color in the March Index may be substantially increased.

Eaton Books New Orders

CHICAGO, March 16—Additional signs of improvement in the automotive industry have been noted by officials of the Eaton Axle & Spring Co. in several orders recently received. The axle division has closed a \$500,000 contract, covering delivery for only a few months, on a new type of axle. The bumper division has closed a contract with the Marmon Motor Car Co. and the cap division has received large additional orders for caps from one of the largest automobile manufacturers.

Mailing Tire Survey Forms

WASHINGTON, March 19—The Rubber Division, Bureau of Foreign and Domestic Commerce, is mailing to tire dealers this week, questionnaires for its annual checkup of tire stocks in the hand of dealers, as of April 1. The division expects to give out a preliminary statement of the results of the survey on April 15, and a final report before the end of April. All tire dealers in the United States are being urged to return the forms promptly, and factory cooperation for the attainment of this end is asked for.

American Cirrus Goes On

DETROIT, March 17—Announcement has been made by W. R. Blacklock, vice-president and general manager, of formation of the A. C. E. Corp., Marysville, Mich., which has taken over the assets of American Cirrus engines. Capitalization is 50,000 shares, no par value, fully paid in. No stock to be offered to the public.

In announcing formation of this company, Mr. Blacklock states that the continuity of its engine production is assured and that the company is not liquidating.

Chevrolet Trucks Priced Nationally

Complete Units Carry Chevrolet Made Bodies

DETROIT, March 18—Chevrolet Motor Car Co. has announced list prices on a number of trucks now available with the company's own bodies, built in the former Martin-Parry plant in Indianapolis, and distributed to dealers through its 57 sub-assemblies in the United States. In announcing prices, Chevrolet gives the price only of the complete unit, as on passenger cars, rather than listing the body separate from the chassis. By this means a national price is established on each type. Following are the available prices:

Half-Ton Models	
72 in. inside length panel	\$555.00
66 in. inside length pickup (closed cab)	487.50
66 in. inside length pickup (open cab)	440.00
Sedan delivery	575.00
Canopy express	550.00
1½-Ton Models	
131-in. Wheelbase	
Chassis and closed cab	625.00
108 in. inside length stake	710.00
108 in. inside length panel	760.00
Canopy express	750.00
108 in. inside length open express	700.00
60 in. width express	715.00
108 x 82 x 60 stock truck	730.00
157-in. Wheelbase	
Chassis and closed cab	695.00
144 x 82 x 42 stake truck	810.00
144 x 60 x 16 express	800.00
144 x 82 x 60 stock truck	830.00

By handling sales of trucks with bodies as a complete unit, Chevrolet of course assumes the service responsibility on the bodies as well as the chassis, as it does on passenger cars.

General Parts Corp. Moving

DETROIT, March 17—Manufacturing operations of the General Parts Corp., which is the original source of replacement parts for Rickenbacker, Wills-St. Claire, Gray, Moon-Diana-Windsor, Cole, Flint, Columbia, Liberty, Dort, Locomobile and Stearns Knight, will be moved to Flint from Detroit about the middle of April. The Moon-Diana-Windsor service business was acquired in January from the Moon Motor Car Co., St. Louis.

Sangamo Electric Declares

CHICAGO, March 16—Directors of the Sangamo Electric Co. have placed the common stock on a \$1 annual basis against former \$2 rate by the declaration of a quarterly dividend of 25 cents a share. The regular quarterly payment of \$1.75 a share on the preferred was also declared.

Canadian Plant Progressing

TORONTO, ONT., March 16—Harry Harbour, Canadian manager for the Radiator Specialty Co., has stated that satisfactory progress is being made for the company's new branch plant at Toronto.

March 21, 1931

Financial Notes

Marlin-Rockwell Corp. has declared regular quarterly dividend of 50 cents, payable April 1 to stockholders of record March 21, and omitted extra dividend of 25 cents, due April 1.

McQuay-Norris Mfg. Co. has declared regular quarterly dividend of 75 cents, payable April 1 to stockholders of record March 23.

Timken-Detroit Axle Co. has declared regular quarterly dividend of 20 cents, payable April 1 to stockholders of record March 20.

Ford Motor Co. of Holland has declared a 20 per cent increased dividend.

Vickers, Ltd., has declared an 8 per cent dividend.

F. M. Germane has announced his resignation as president of the Bearings Co. of America.

Reapproval by the Federal Trade Commission of the National Code of Practices for Marketing Refined Petroleum Products was asked of the Commission Friday, March 13, by the American petroleum industry.

Texas Corp. and subsidiaries report net income for 1930 of \$15,073,303 after all charges. This is equivalent to \$1.53 a share on outstanding stock and compares with earnings of \$48,318,072, or \$5.12 a share, for 1929.

Union Carbide and Carbon Corp. reports net earnings for 1930 of \$28,041,425 after all charges. This is equivalent to \$3.12 a share on capital stock and compares with earnings of \$35,427,024, or \$3.94 a share, for the previous year.

Aviation Corp. of America reports net loss for 1930 of \$305,271. This compares with loss for 1929 of \$317,412.

Lycorning Mfg. Co. has declared regular quarterly dividend of \$2 on 8 per cent preferred stock, payable April 1 to holders of record March 26.

Motor Finance Corp. has declared regular quarterly dividend of \$2 on preferred stock payable March 31 to holders of record March 24.

Willys-Overland Co. has declared regular quarterly dividend of \$1.75 on preferred stock, payable April 1 to holders of record March 25.

Peerless Motor Car Co. reports net loss for the last quarter of 1930 of \$87,304 after interest and depreciation. This compared with net profit in the December quarter of 1929 of \$52,013, or 20 cents a share.

United-Carr Fastener Corp. and subsidiaries report net profit for 1930 of \$67,909, or 27 cents a share, after all charges. This compares with earnings of \$568,090, or \$2.27 a share, for 1929.

Vanadium Corp. of America reports net income for 1930, after taxes and charges, of \$1,116,983, equal to \$3.04 a share, and compares with \$1,849,886, or \$5.26 a share, in 1929.

Briggs Mfg. Co. has declared an extra dividend of 12½ cents a share and regular quarterly dividend of 37½ cents a share on common stock, both payable April 25 to holders of record April 10.

Graham-Paige Motor Corp. has declared regular quarterly dividend of \$1.75 on first preferred stock payable April 1 to holders of record March 14.

White Motor Co. has declared regular quarterly dividend of 25 cents a share, placing the stock on a \$1 yearly basis instead of \$2 previously paid payable April 1 to holders of record March 23.

Willys-Overland Co. has declared regular quarterly dividend of \$1.75 on preferred stock payable April 1 to holders of record March 25.

Spicer Mfg. Corp. has declared regular quarterly dividend of 75 cents on preferred stock payable March 15 to holders of record March 3.

Motor Products Corp. has declared its regular quarterly 50 cent dividend, payable April 1, to stockholders of record March 20.

Midland Reports Profit

CHICAGO, March 16—Midland Steel Products Co. reports for 1930 net profits of slightly more than \$1,270,000, insufficient to cover the full payment of \$3 dividends on the common stock of the year after payment of the first preferred dividend and the dividends on the \$2 dividend shares. Net current assets were reported as in excess of \$7,400,000.

Illinois Railroads Seek to Cut Rates

Supplement Action of Other C.F.A. Lines

WASHINGTON, March 19—Application of railroads in Illinois classification territory (one of several special classification territories; it includes the State of Illinois and a few points in Western Trunk Line territory) to reduce commodity rates on automobiles in that section has been granted by the Interstate Commerce Commission. These carriers made application on so called sixth section or short notice requirement, and asked permission to establish the lower rates within 10 days after filing of the application, which was received on March 16.

The Commission granted the application immediately and gave the applicants 20 days in which to file the new schedules. They will thus be in operation by April 5 or five days before the reduced rates to go into effect in other sections of Central Freight Association territory.

Illustrative of the new rates to apply in Illinois classification are the following, stated in cents per 100-lb.:

TO	FROM		
	Chicago	Milwaukee, Racine and Kenosha, Wis.	St. Louis
Altamont, Ill. ..	57	..	32.5
Alvin, Ill.	40	..	..
Aurora, Ill. ....	..	..	71
Bloomington, Ill. ..	40	..	45
Cairo, Ill.	91	104	42.5
Danville, Ill.	40	..	52.5
Joliet, Ill. ....	..	..	71
Paducah, Ky. ....	..	..	47.5
Peoria, Ill.	45	59	47.5
St. Louis, Mo. ...	71	87	..
S. Chicago, Ill. ...	..	..	71
Springfield, Ill. ...	52.5	71	32.5

Kelsey-Hayes Concentrates

DETROIT, March 16—Domestic production of wheels by the Kelsey-Hayes Wheel Co. is now concentrated in the company's two Detroit plants and the Jackson plant of the former Jackson Steel Products Div., General Motors Corp. In addition to these plants, only the Windsor and Memphis units are now operated by Kelsey-Hayes. Other plants at Albion, Jackson and Buffalo having been disposed of.

Chris Craft Sets Record

CHICAGO, March 16—Another sales and shipping record was reported by the Chris-Craft Corp. for February, according to J. E. Clifford, general sales manager. "The month of February just closed saw an increase in sales of 49.39 per cent over February, 1930, and a 39.76 per cent increase over February, 1929."

Franklin Reduces Speedster

SYRACUSE, March 18—The price of the Franklin speedster type on the Model 15 de luxe chassis has been reduced from \$3,345 to \$2,845.

Willys-Overland Reports 1930 Loss

Reorganization Charges Brought Down Gross

TOLEDO, March 18—Sales of 80,555 units amounting to \$55,581,945 brought a gross profit to Willys-Overland of \$3,221,470 in 1930, but heavy charges due to reconstruction and reorganization resulted in a loss of \$7,588,392 carried to surplus, it was announced by L. A. Miller, president, in the annual report issued Thursday.

The company continued its policy of cleaning house financially providing \$2,661,426 in depreciation and amortization on operations for the year, \$520,169 shrinkage in common stocks of controlled companies, \$2,633,904 for losses on non-current models and obsolete materials, and other mark-offs, including heavy allowances for bad debts, surplus was \$21,097,880 after adjustments.

The company maintained a strong cash position with \$648,571 cash, \$3,289,285 in time certificates of deposit, \$10,057,184 inventory, for total current assets of \$16,096,739 against current liabilities totaling \$4,590,800.

During the year the company had no bank loans, continued its preferred dividends, retired \$1,070,000 preferred stock, redeemed \$1,000,000 of bonds and purchased \$495,000 of preferred stock for retirement this year.

The balance sheet showed reserve of \$6,337,387 carried against tools and inventory and \$21,859,278 against buildings and machinery.

President Miller said the entirely new lines of sixes and eights in cars and trucks have put the company in the best competitive position it has enjoyed for years. He said all engineering and development expense for the new models have been written off and all old models sold. He said the company made sacrifices for its distributor and dealer organization to put them in strategic position for 1931 business.

Chicago Tool Reports

CHICAGO, March 16—Chicago Pneumatic Tool and subsidiaries had a 1930 net income of \$209,839, equal to \$1.12 a share on \$3.50 preferred stock, against \$1,582,161, or \$4.63 a common share, in 1929.

G.M. Trailers Interchangeable

DETROIT, March 18—General Motors Truck Co. will compete for business from companies using other makes of trucks, and prices have been fixed to be competitive with leading independent makers of trailers. The line is to include semi-trailers, four-wheel and six-wheel units, ranging from a gross rating of 8000 lb. up to 45,000 lb., based on the axles.

The company stressed the interchangeability of parts between the trailers and G.M. trucks.

Prices on the complete new General Motors Trailer line are given below in tabular form.

Prices on the New General Motors Trailers

	Semi-Auto.		Semi-Trailer		4-Wheel		6-Wheel	
Model TT	226	251	261	285	426	451	461	661
Standard Body (ft.)	14	16	18	20	12	14	14	18
Maximum Body (ft.)	18	20	22	22	12	18	18	22
Standard Price (chassis)	\$390	\$845	\$1,145	.....	.....	\$1,295	\$1,845	\$2,625
Standard Rating	8,000	12,000	18,000	24,000	16,000	24,000	36,000	45,000
Standard Tires (duals)	6.00	34x7	9.75	10.50	6.00	34x7	9.75	9.75
Wheels, Diameter	20"	20"	20"	20"	20"	20"	20"	20"
Tread	64%	69	71%	72%	69	72	74	74
Chassis Weight (average)	1,700	3,500	4,500	5,000	3,000	4,330	4,800	7,850

Automotive Industries

Briggs Mfg. Declares

DETROIT, March 17—Briggs Mfg. Co. has declared quarterly dividend of 37½ cents per share and an extra dividend of 12½ cents a share on outstanding no par value stock, payable April 25 to stock of record April 10.

Stutz Prices Reduced

INDIANAPOLIS, March 18—The Stutz Motor Car Co. of America has announced the reduction of prices for several models of the Stutz line which are effective immediately, according to E. S. Gorrell, president. Five closed models of the MA series have been cut in amounts ranging from \$250 to \$755, the degree of reduction depending largely on the general selection of models.

In the MB series the reduction has been made in the club sedan model which will sell for \$160 less than heretofore, Mr. Gorrell said. The five-passenger sedan of the MA series or model 22 formerly was listed at \$3,445. With the reduction the list is \$2,690, a saving of \$755. The reductions give the Stutz line a price range of \$1,995 to \$10,800.

Borg-Warner Reports

CHICAGO, March 16—Borg-Warner Corp. and its subsidiaries, in the annual report for 1930, just made public, show net income last year, after Federal taxes, of \$2,318,120, against \$7,669,795 in 1929. After preferred dividends there remained a balance of \$2,046,520, equivalent to \$1.66 a share on the \$1,230,783 common shares outstanding, against \$7,424,795 in 1929, a return of \$6.03 on a like amount of stock. After common dividends the company had a deficit from its 1930 operations of \$1,290,672, compared with surplus earnings of \$3,304,741 for 1929.

Moto Meter Reports Loss

CHICAGO, March 16—The report of Moto Meter Gauge & Equipment Corp. and subsidiaries for the year ended Dec. 31, 1930, shows a net loss of \$637,882. In 1929 Moto Meter Gauge & Equipment Corp. and predecessor and subsidiary companies showed net profit of \$161,150, of which \$292,096 represented net income for the period from Jan. 1 to July 19, 1929, after Federal taxes and \$130,946 represented net loss of Moto Meter Gauge & Equipment and subsidiaries for the period July 20 to Dec. 31, 1929.

Sales Returns Indicate Drop

30 Per Cent Loss For February Seen

PHILADELPHIA, March 18—February registrations of new passenger cars ran 34 per cent behind last year in the 26 states from which final reports have been received. When complete returns are available for the country as a whole, it is probable that this loss will be reduced to about 30 per cent, which would make the February total about 150,000 as compared with 212,000 a year ago.

Reports from this group of states indicate that Chevrolet again led Ford in passenger car sales in February for the third successive month. In these 26 states, Chevrolet has a lead of 10 per cent.

Casing Shipments Off

NEW YORK, March 16—Shipments of pneumatic casings from manufacturers during the month of January amounted to 3,744,349, an increase of 11.4 per cent over December, and a decrease of 15 per cent under January a year ago, according to the Rubber Manufacturers Association.

Pneumatic casings on hand as of January 31 are placed at 8,957,307, a slight decrease under December, but practically 25 per cent under January 31, 1930.

Production during the month is placed at 3,674,627, an increase of 30.6 per cent over December, and a decrease of 18 per cent from January a year ago.

Bendix Aviation Reports

CHICAGO, March 16—Directors of the Bendix Aviation Corp. have reported earnings for 1930 of \$1,183,859, after taxes and all other charges. This is equal to about 56 cents a share and compares with earnings for 1929 of \$7,416,408, or \$3.53 per share. The directors declared the regular quarterly dividend of 25 cents payable April 1 to stockholders of record March 10. During the year the Bendix Corp. acquired three new subsidiaries. Its principal plants are located in South Bend, Ind.; Chicago, Elmira, N. Y., East Orange, N. J., and Detroit. The stock is listed on the New York and Chicago Stock Exchanges.

Kermath Reports Loss

DETROIT, March 18—The Kermath Mfg. Co. reports for the year ending Dec. 31, 1930, a net loss of \$41,771, which reflects a net operating loss of \$48,456. The surplus account at the end of the year stood at \$459,409.

During the year the company introduced a twelve-cylinder, vee type 300-400 hp. engine, a twelve-cylinder, vee type 85-145 hp. model, and a six-cylinder, L-head, 85 hp. model, with or without reduction gears. All were designed for the marine field.

March 21, 1931

Marmon Forms Truck Subsidiary

Will Manufacture Herrington Design

INDIANAPOLIS, March 18—G. M. Williams, president of the Marmon Motor Car Co., and F. E. Moskovics have been named president and chairman of the board respectively of the newly formed Marmon-Herrington Co. here. The new firm will manufacture multiple drive trucks of new design which will incorporate features new to the commercial transport field in America. The trucks will be particularly fitted for work under unusually severe conditions.

The truck design was brought to the company by Arthur W. S. Herrington, long identified with the commercial motor transport field, who also will serve the new company as vice-president. Walter C. Marmon, of the Marmon company, will be a director.

Mr. Williams asserted that operations of the new company will be started in the Marmon plants as soon as possible in order to give delivery on trucks that have already been sold. Williams said that orders on hand assured factory activity for some time. One of the plants of the Marmon company has been taken over for the manufacture of the trucks.

White Has New Type

CLEVELAND, March 16—A "House to House" six-cylinder delivery truck designed specifically for multiple stop service is announced by the White Co. This new truck is operated by a single pedal in the driving well, and which can be driven from either a standing or seated position. The truck is built entirely of standard White units.

Chicago Boat Show Adds Space

CHICAGO, March 16—One-third more space than was used a year ago will be taken by the exhibitors at the second annual National Motor Boat Show, which will open on the Navy Pier, April 24, according to H. H. Erickson, manager of the exposition.

Chevrolet Salesmen Meet

CHICAGO, March 16—An aggressive move to bring business back to the level of previous years was made here last week with the meeting of 950 Chevrolet retail salesmen at the Studebaker theater to hear factory officials conduct a sales convention.

Illinois Sales Increase

CHICAGO, March 16—For the third consecutive month automobile sales in Illinois have increased, according to a statement from the Illinois Chamber of Commerce listing February new-car sales at 9772, an increase of 416 cars over the January total.

Six-Point Suspension

Automobile accident fatalities numbered 614 in the four weeks ending February 21, 1931. This number is compared with 574 deaths during the four weeks ending February 22, 1930.

The Martin-Parry Corp., York, Pa., suffered loss on March 9 from a stubborn fire which ate through partitions and destroyed valuable material in the filing room of the main building. Fred K. Small, president, stated following the fire, that it would be impossible to estimate the exact extent of the loss.

North and South Carolina legislatures have about settled difficulties relative to an agreement permitting complete reciprocity of motor vehicle licenses. Much strife between these two states has developed in recent years over conquest of license regulations and frequently retaliatory round-up of cars and trucks have resulted in the drivers being compelled to pay substantial fines.

Otis Steel Co., Cleveland, Ohio, in 1930 earned \$868,729 after all charges, including estimated taxes.

The John Warren Watson Co., Philadelphia, announces that Dodge Brothers has approved the installation of Watson Rubber-Flow Stabilizers for special equipment on Dodge trucks. Dodge dealers may specify Watson equipment on trucks when ordered, if desired, or can have them installed by the local Watson distributor.

Purfex Mfg. Co., Philadelphia, has announced that break-in oil, radiator cleaner and an aluminum base radiator cement have been added to their lists of products.

William Sellers & Co., Inc., Philadelphia, has announced a number of personnel changes including the election of G. H. Benzon as a vice-president.

The Bureau of Standards has announced publication of the new "Standards Year Book for 1931," the latest volume of the series which was started in 1927.

Gears & Forgings, Inc., Cleveland, Ohio, has announced the appointment of George H. Davis to the Pittsburgh sales office from the Milwaukee territory.

The Metzgar Co., Inc., Grand Rapids, Mich., has just issued a new catalog.

Glenn W. Watson has invented an automatic typewriter operated by radio. The development is seen as of possible considerable value to the aeronautical branch of the aircraft industry.

American Arbitration Association announces the publication of a "Code of Arbitration Practice and Procedure." It presents a standard, organized practice of arbitration now in use by business men and attorneys which may be applied to the settlement of business controversies in any jurisdiction in the United States.

I. H. C. Cuts Salaries

CHICAGO, March 16—Effective April 1, salaries of all employees, except factory wage earners, in the International Harvester Co., will be reduced 5 to 10 per cent, it was announced Saturday. The reduction also includes executive officers. A statement of the cut was made by George A. Ranney, vice-president and treasurer.

Nash Takes Share In Canadian Firm

Cars Will Be Made in Durant Leaside Plant

TORONTO, March 18—A charter for Dominion Motors, Ltd., the new company formed by Charles W. Nash, president of Nash Motors, Kenosha, Wis.; and Roy D. Kerby, president of Durant Motors of Canada, was issued March 14. Dominion Motors, Ltd., the charter provides, is incorporated for the purpose of manufacturing automobiles, trucks, etc.; and is empowered to acquire the capital stock and assets of Durant Motors of Canada, Ltd., subject to ratification by the shareholders.

The new corporation was granted an authorized capital of \$3,000,000 in 300,000 shares of common stock at \$10 par value, to exchange, if ratified by shareholders, on the basis of share for share with Durant Motors of Canada, Ltd. The formation of the new concern has been announced by Mr. Nash and Mr. Kerby. According to the agreement reached between Nash Motors and Durant Motors, Nash cars would be manufactured at the Leaside plant of Durant, instead of as at present being imported from the United States. According to the agreement reached between Mr. Nash and Mr. Kerby, the latter will be president and general manager of Dominion Motors, while Mr. Nash will be chairman of the board of directors.

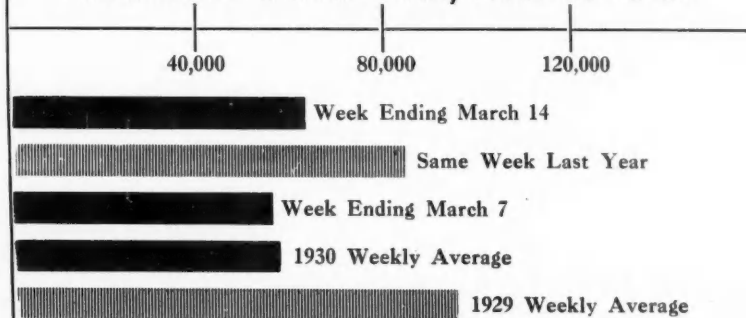
White Co. Report Loss

CLEVELAND, March 16—White Motor Co., excluding undistributed earnings of White Motor Security Co. and White Motor Realty Co., in a preliminary statement estimates its net loss for 1930 at approximately \$84,000, against net profit of \$2,547,646, equal to \$3.18 a common share, in 1929.

Massey Reports Loss

TORONTO, ONT., March 16—A net loss of \$2,247,439 for the fiscal year ended Nov. 30 was reported in the annual statement of the Massey-Harris Co., issued yesterday. Last year a net profit of \$2,800,813 was shown.

Automotive Industries Weekly Production Chart



Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

NEW YORK, March 18—Stormy weather last week over a considerable part of the country prevented any appreciable improvement in trade. In fact, general business in some sections slackened. The slight increase in employment during February has been followed by small increases here and there so far this month.

CHAIN-STORE SALES

Sales of 29 store chains during the first two months of this year were .36 per cent above those in the corresponding period last year. Sales of three mail-order houses during the first two months of this year were 13.82 per cent below those of a year ago.

FARM PRICE INDEX

The index of the general level of farm prices on Feb. 15 stood at 90, based on the prewar level as 100, as against 94 a month earlier and 131 a year earlier.

CAR LOADINGS

Railway freight loadings during the week ended Feb. 28 totaled 682,000 cars, which marks declines of 31,938 cars below those in the preceding week, in which there was a holiday, of 217,494 cars below those a year ago, and of 296,201 cars below those two years ago.

COTTON CLOTH OUTPUT

Production of standard cotton cloth during February, according to the Association of Cotton Textile Merchants of New York, amounted to 212,168,000 yd. Shipments were equivalent to 117 per cent of production, while sales were equivalent to 154 per cent of production. The ratio of sales to production was the largest in four years.

CRUDE OIL OUTPUT

Average daily crude oil production for the week ended March 7 amounted to 2,156,700 bbl., as against 2,104,900 bbl. for the preceding week, and 2,535,350 bbl. a year ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended March 14 stood at 76, as against 76 the week before and 75.8 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City during the week ended March 11 were 23 per cent below those a year ago.

STOCK MARKET

Following the sharp decline in the preceding week, the stock market last week was unsettled, with the volume of trading light. Price changes during the week were irregular, with some issues making sharp advances and a few others suffering substantial declines. However, the majority of issues showed only slight changes one way or the other.

BROKERS' LOANS

Brokers' loans in New York City during the week ended March 11 increased \$29,000,000, bringing the total up to \$1,819,000,000.

RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended March 11 showed increases of \$5,000,000 in holdings of government securities and of \$50,000,000 in holdings of bills bought in the open market, while holdings of discounted bills decreased \$18,000,000. The reserve ratio on March 11 was 83.3 per cent, as against 84.1 per cent both a week and two weeks earlier.

Checker Passes Dividend

CHICAGO, March 16—Checker Cab Mfg. Co. directors voted to omit the monthly dividend of 15 cents a share due at this time.

Muskegon Piston Declares

DETROIT, March 16—Muskegon Piston Ring Co. has reported net earnings for year ended December, 1930, amounting to \$166,474, or \$3.20 per share, compared with \$300,536, or \$5.79 a share, for 1929.

The ratio of current assets to current liabilities is 2.83 to 1, as compared to 2.18 to 1 at Dec. 31, 1929.

Regular quarterly dividend of 75 cents payable March 31 to stockholders of record March 13, has been declared.

Canadian Acme Has Profit

TORONTO, March 16—Canadian Acme Screw & Gear, Ltd., this city, suffered a marked decrease in volume during the past year, its annual financial report reveals, as its principal customers are in the motor business. The addition of certain new items of manufacture prevented the company from suffering as great a reduction in business as would otherwise have been the case, and it closed the year with a small net profit.

Houdaille-Hershey Declares

CHICAGO, March 16—Directors of the Houdaille-Hershey Corp. have declared the regular quarterly dividend of 62½ cents a share on the class A stock. Claire L. Barnes, president of the company, stated: "Sales for February increased nearly 45 per cent over January and our outlook for March is promising. Large savings were initiated in 1930, which necessarily will more fully be reflected in 1931 earnings."

Perfect Circle Declares

HAGERSTOWN, IND., March 16—The board of directors of the Perfect Circle Company at their regular monthly meeting declared the first quarterly dividend for 1931 of 50 cents a share on the 162,500 shares of common stock outstanding. All stockholders of record as of March 20, 1931, are eligible to this quarterly dividend which is payable April 1, 1931.

Canadian Gas Price Cut

CALGARY, ALTA., March 16—Reduction in the retail price of gasoline by two cents a gallon was announced by A. M. McQueen, vice-president and general manager of Imperial Oil, Ltd.

Reductions, effective today, are due to drastic price cuts in the United States and will affect the prairie provinces, Manitoba, Saskatchewan and Alberta, Mr. McQueen said.

A. E. Co. Enters Canada

MONTREAL, March 16—A complete line of two and four-wheel drive heavy-duty trucks, manufactured by Associated Equipment Co., Ltd., of England, are now offered for sale in Canada by Associated Equipment Co., Ltd., Montreal.

Bonus Payments Help Car Sales

But Effect Can Only Be Estimated

PHILADELPHIA, March 19—While government payments under the Federal Soldiers' Bonus Act, which have been going forward for about two weeks, have influenced the sales of automobiles, most of the sales directly to these payments have been of used or low-priced new cars. This fact has been brought out by letters to *Automotive Industries* from the secretaries of 20 of the leading automobile dealers' associations in the United States.

Dealers are closely following the progress of the payments, it is brought out by the letters, and expect to get a fair share of the purchases which will undoubtedly be made from the bonus money. In only a few cases, however, do the dealers believe that the share of business obtained will be more than an average cut out of the purchaser's dollar.

In many sections of the country, the letters bring out, bonus payments have just begun, and it is impossible to estimate at present the actual influence of these payments on automobile sales.

Replies to questions concerning the influence of the bonus payments on car sales have been received to date from the following cities: Galesburg, Ill., Cleveland, Omaha, St. Louis, Philadelphia, Kansas City, Mo., Syracuse, Detroit, Norristown, Pa., Toledo, Springfield, Mass., Savannah, Atlanta, Cumberland, Md., Newark, N. J., Charleston, S. C., Lowell, Mass., St. Petersburg, Fla., and Washington, D. C.

Gillette Rubber Adding

EAU CLAIRE, WIS., March 16—The Gillette Rubber Co. has placed contracts for the construction of a fourth-story addition to the present three-story shipping room, 140 x 240 ft. The Gillette company recently formed an affiliation with the United States Rubber Co. Working schedules have been stepped up sharply and current operations are on a three eight-hour-shift basis, with 1028 employees on the payroll.

Making Aircraft Pontoons

WINNIPEG, MAN., March 16—Manufacture of airplane pontoons is now being carried on by Macdonald Aircraft, Ltd. The factory is a two-story structure with a floor space of 10,000 sq. ft. and represents an investment of approximately \$40,000. In addition to manufacturing pontoons, they also manufacture a line of airplane accessories.

Calthorpe Enters Canada

TORONTO, ONT., March 16—Herbert C. Priest, motorcycle and bicycle distributor, this city, has been appointed Canadian distributor for the Calthorpe motorcycle, manufactured by the Calthorpe Motorcycle Co., Birmingham, England.

Automotive Buying Bolsters Steel Market

Few Requirements Being Contracted by Quarters

NEW YORK, March 17—Demand from motor car manufacturers, body-builders and parts-makers continues to be the steel market's outstanding feature. Buying can no longer be characterized as being along from hand-to-mouth lines because the larger consumers anticipate their requirements over whatever period is covered by a definite production program in their own plants, but on the other hand no steel is being contracted for by the quarter, as was the case in former years.

Disappearance of this practice as an accomplished change in the method of steel buying has come in for recognition in the market of late, and sellers have let it be understood that, if conditions so shaped themselves as to justify the putting up of prices, buyers could hardly expect going prices to be maintained during the current quarter. In other words if contracting by the quarter has passed out of the picture, then sellers do not want to be criticized if they change their prices for current requirements without waiting until the end of the quarter for higher prices to become effective. For the time being discussion of these changes in policy is largely academic.

Incoming orders in March have permitted further upward revision of operating schedules in most finishing mills. Strip mills are doing much better in both hot-rolled and cold-rolled orders. The recently announced advance of \$1 a ton in the price of the former and of \$2 a ton in cold-rolled has still to run the gauntlet of a sufficient number of representative transactions before the market can be said to have definitely advanced to the extent of these higher asking prices. Opening of a new 14-in. merchant mill at Detroit on Tuesday adds 15,000 tons to the monthly capacity of that district.

Pig Iron—Better than seasonal improvement is reflected in shipments of pig iron to automotive foundries. The market is unchanged.

Aluminum—News that the Government will expend approximately \$18,000,000 in the construction of 388 airplanes is of direct benefit to the aluminum market which continues steady and unchanged.

Copper—Custom smelters are willing to sell at 10 cents a pound delivered, with producers holding at 10½ cents. Demand is light.

Tin—London maintains prices in spite of a lack of American support. Straits tin sold at 27.15 cents at the week's opening.

Lead—Better demand from storage battery manufacturers is looked for their last month's purchases having been abnormally light. The market is quiet and unchanged.

Zinc—Steady amid moderate demand.

Manufactures New Device

VICTORIA, B. C., March 16—The Hiker Mfg. Co., Ltd., has acquired Canadian manufacturing rights to a new automobile signaling device, and are commencing its manufacture.

Six-Point Suspension

Oakland Motor Car Co.'s new branch at Boston was opened March 7 with Mayor James M. Curley congratulating District Manager Fred P. Sibley. There will be no retail sales from the branch.

Cleveland Pneumatic Tool Co. has completed construction of the world's largest aerol shock absorbing struts. They are designed to support a transport airplane having a maximum normal load of 25,000 lb.

Verville Aircraft Co., Detroit, has announced delivery of four YPT-10 primary training planes powered with Wright 165-hp, five-cylinder engines to the United States Army. The company expects to put this model into commercial production soon.

Limousine Body Co., Kalamazoo, Mich., has added more than \$375,000 of group life insurance for the protection of its employees, making the total sum in force more than \$800,000. The additional coverage is paid for by the cooperative method, under which the employer and employee share the cost.

Standard Oil Co. of Indiana is sponsoring a 30-day endurance run of 13 automobiles around the Indianapolis Speedway. Designed to test the lubricating qualities of laboratory supervised oil, the tests are being run under the supervision of the Contest Board, American Automobile Association.

Pioneer Instrument Corp., a division of the Bendix Aviation Corp., has received orders from the Aeronautics Branch, Department of Commerce, for four sets of special test instruments to be used at engineering bases maintained by the branch. The instruments are those which will be used in checking airplanes which are submitted for the Approved Type Certificate.

Bendix Service Corp., New York branch, has been taken over by Fred J. Ryan, Inc., automotive accessory distributor.

The Dittmer Gear & Mfg. Corp., Rockport, N. Y., announces the appointment of Chas. B. Frances as works manager. Mr. Frances was formerly superintendent of the Cunningham Motor Car Co. and has been identified with the automotive industry for more than 20 years.

AC Spark Plug Co. has announced that Albra Fessler, head of ceramic research of the company, has been awarded a fellowship by the American Ceramic Society, following the thirty-third annual meeting of the society in Cleveland. Mr. Fessler is 32 years old and is the author of many scientific papers on ceramics, particularly in the electrical insulation field.

Goodyear Tire & Rubber Co., Akron, Ohio, recently advanced its production schedule to 53,000 units daily, officials of the company have announced. This is an increase of 3000 casings daily over the February production. No additional employees have been taken on following the increase.

The American Hammered Piston Ring Co. has just published a booklet for free distribution called "32 Reasons for Oil Pumping."

National Acme Co., Cleveland, Ohio, has announced the appointment of T. S. Berna as general sales manager of the company. He was formerly sales manager of the Union Twist Drill Co.

The new De Vaux six-cylinder car will carry Toledo super-forged valves as standard equipment, according to an announcement by the Toledo Steel Products Co.

The Bunting Brass & Bronze Co. has announced that bushings and bearings made of super-hard, low friction, bronze alloy are now available. The lead content in this new bearing can be varied from 5 to 25 per cent at the customer's specifications, depending on the type of service required.

The American Society for Steel Treating, Philadelphia Chapter, held a meeting Thursday, March 5, at which R. R. Moore, metallurgist, Wright Aeronautical Corp., Paterson, N. J., delivered a paper on "Non-Ferrous Metallurgy as Applied to Aircraft Engines."

Lehigh University, Bethlehem, Pa., announces an all-day welding symposium to be held Friday, March 27. Papers and discussions on processes and special applications of welding will be part of the program. Demonstrations of methods and inspection will be given.

The Bureau of Public Roads has purchased 64 Graham-Paige six-cylinder commercial cars for immediate delivery to the Bureau's Engineering Corps. The new vehicles have screen side bodies designed for carrying personnel, equipment and supplies on reconnaissance and surveys.

New Distillation Method Reported

Penn State Scientist Describes It to Group

PHILADELPHIA, March 17—A new method of preparing gasoline of unusually high knock rating from crude oil by a distillation process has been discovered by Dean M. R. Fenske of Pennsylvania State College. Dean Fenske is in charge of a research intended to improve the products obtained from Pennsylvania crude oil, which was inaugurated by the Pennsylvania legislature two years ago.

The discovery is that the knock ratings of small fractions of gasoline vary greatly and that the fractions of lowest knock rating can be removed by a superfractional distillation. For instance, the straight-run Pennsylvania gasoline used in the investigation had a knock rating of 9, and it was found possible by the application of Dr. Fenske's method to separate out 65 per cent of this gasoline and get a blend with a knock rating of only 2, while 80 per cent could be separated out that had a knock rating of 3.

How great may be the difference in knock ratings of two fractions that have almost the same volatility is shown by the fact cited that one fraction obtained at 115.5 deg. Fahr. had a knock rating of 4.8, while another obtained at 116.1 deg. Fahr. had a knock rating of 16.5.

The investigation is being continued with a view to developing methods of operation which will enable refiners to employ this method of super-fractional distillation economically.

Truck Warranty Revised

NEW YORK, March 16—The Motor Truck Committee of the National Automobile Chamber of Commerce has authorized a new form of standard warranty agreement providing that "hereafter service on motor trucks shall be confined to 90 days after the vehicle is delivered to the original purchaser, or prior to the time when the vehicle has been operated 5000 miles, whichever event shall first occur."

Reports were also rendered at the meeting indicating opposition among manufacturers and other shippers to the railroad program for equalizing competition between highway and railway transportation. A. J. Brosseau, president of Mack Trucks, Inc., presided.

Auburn Adds 122 Dealers

AUBURN, IND., March 17—Auburn added 122 dealers in February of this year, a record for any similar month, N. E. McDarby, vice-president in charge of sales, announces. New dealers for March are being added at the rate of nine daily.

Since Jan. 1 the company has added 255 new dealers and distributors, bringing its distributing organization up to the largest point in its history.

Ethyl Plans Detroit Laboratory

DETROIT, March 16—Plans for the construction of a new laboratory at Milwaukee and Oakland Avenues in Detroit have been announced by the Ethyl Gasoline Corp.

January Exports Off From December

Denmark Becomes Leading Market

WASHINGTON, March 17—The value of automotive exports during January amounted to \$15,480,487, a decline from the December, 1930, figure of \$16,413,129, as well as a decrease of \$15,686,187 or 50.3 per cent from the \$31,166,674 total for January, 1930, according to the Automotive Division, Department of Commerce.

The lowered valuation was accounted for entirely by the reduced shipments of passenger cars and trucks, which amounted to \$7,127,056 in the month under review, as compared with the December and January, 1930, totals of \$8,841,560 and \$11,563,673. Exports of miscellaneous automotive products, to the contrary, amounted to \$8,353,431, an increase of \$781,862, or 10.3 per cent over the December shipments valued at \$7,571,569.

Due to changes in the official export classifications a comparison with the 1930 totals is rather difficult, except in the case of "passenger cars, valued at over \$2,000" and "trucks, exceeding 2½ tons capacity."

Denmark, with a gain over December amounting to 121 per cent in number of units, and 100 per cent in value, took the position of chief purchaser of American passenger cars during January, followed by Canada and British India, each of whom showed a slight increase over the preceding month.

Hill Diesel Moving

LANSING, March 18—Harry D. Hill, vice-president and general manager of the Hill Diesel Engine Co., has announced that the firm will vacate its present plant in the downtown section, which it has outgrown, and will move into the Ryan-Bohn foundry building, located on the west city limits adjacent to the Durant Motor Co. plant.

Several thousand dollars' worth of new equipment will be installed.

The new plant will give the concern more than double its present floor space and facilities for greater production schedules. The present location has but 44,000 sq. ft. of space, while the foundry building offers nearly 100,000 sq. ft., and good railroad facilities.

Martin Gets Navy Contract

BALTIMORE, March 19—Charles A. Van Dusen, vice-president and general manager of the Glenn L. Martin Co., Baltimore, has announced that his company has been awarded a contract by the Navy Department for 12 diving bombing planes. They will be built at the Baltimore plant at a cost of \$525,000 and will be ready for delivery in time to take part in the naval maneuvers next winter. The contract also includes the manufacture of spare parts.

Six-Point Suspension

Graham-Paige Motor Car Corp. has announced minor improvements in the town sedan on the Special Six and Standard Six chassis. Models with wood wheels will be equipped with chromium-plated hub shields similar to those used on the 8-cylinder cars and a new style of single bar bumper will be mounted. Five color combinations are now available and there will be no change in the list price.

French Chamber of Deputies has under consideration a bill which would substitute a sur-tax of 32 francs per 100 liters on gasoline for the horsepower tax now levied on automobiles. The Department of Commerce reports that it is claimed that the increase should yield additional revenue of about \$30,000,000. This is practically equivalent to the return from the present horsepower tax.

Louisville new car sales in February showed a decline of 36.9 per cent, according to J. Garland Lea, Secretary of the Louisville Automobile Dealers' Ass'n. This is in comparison with last year.

The American Management Association has completed plans for an industrial marketing conference to be held at Washington, D. C., March 19 and 20. Headquarters during the session will be at the Hotel Washington, Fifteenth Street and Pennsylvania Ave., N. W.

E. S. Houghton & Co., Philadelphia, has announced that L. E. Murphy was re-elected president at the last quarterly meeting of stockholders.

American Chain Co., Inc., and its associate companies have just issued a pocket-sized booklet showing a list of products of each of the companies.

Franklin Automobile Co. begins this month a broad advertising campaign. Almost every well-known medium will be used.

American Institute of Weights and Measures, 33 Rector St., New York, has issued a new compilation of data entitled "Measurements, Units and Standards." The booklet contains an article recommending *timex* and *spacex* as names for the Einstein specialization of basic time and space.

Canadian National Research Council has developed a process for manufacturing industrial alcohol from natural gas waste. The Department of Commerce reports that this is designed as a means of utilizing the large waste of gas in the Turner Valley oil fields of Alberta. It is estimated that the operating cost for converting the gas into alcohol would not exceed 25 cents a gallon.

Evans Auto Loading Co., Inc., stockholders voted to change the name of the Corporation to Evans Products, Inc., at the recent annual meeting. Production of battery plate separators and wood block flooring on the part of the company made the change in name desirable, it was stated by E. S. Evans, president.

The American Society of Mechanical Engineers has published a proposed American standard for rotating air cylinders and adapters which has been completed recently by Technical Committee No. 11 on chucks and chuck jaws of the Sectional Committee on Small Tools and Machine Tool Elements. The purpose of the standard is to obtain the interchangeability of different makes of air cylinders on the spindles of machine tools without the necessity of changing the adapter or draw rod. The Standard in question is one of a series for small tools and machine tool elements and will be followed by proposals covering the standardization of certain elements of chucks and chuck jaws and spindle noses collets.

The Donaldson Co., Inc., St. Paul, Minn., has purchased the Air Cleaner patent rights and Air Cleaner business of the Bennett Carburetor Co., Minneapolis. A. C. Bennett is retiring from the air cleaner business.

Memphis, Tenn., automobile show closed March 2. Attendance was estimated at 50,000 during the week exhibit.

The Automotive Service Association of New York, largest and oldest organization of its kind, held its twelfth anniversary service banquet at the Hotel Astor, New York, Thursday evening, March 12. Five hundred persons are expected to attend.

The Society of Automotive Engineers, Oregon and Northwest sections, have designated Longview, Washington, as the place for their joint meeting on June 5. Meeting's chairman will be C. C. Humber. More than 300 persons are expected to attend the joint session.

January Financing 20 Per Cent Below '30

Totaled \$62,466,759 In Retail Field

WASHINGTON, March 18—January retail automobile financing, based on reports to the Department of Commerce from 492 automobile financing companies reached \$62,466,759 as compared with about \$52,000,000 for the same month of 1928 and \$75,000,000 for January, 1929, and \$73,000,000 (20 per cent under) for the first month of 1930.

The January, 1931, figures for these 492 concerns show \$40,249,307 for wholesale financing, a drop of 30 per cent under that of a year ago.

Cars financed by these companies in January totaled 165,419 units, of which 35.9 per cent were new, 61.5 were used and 2.6 unclassified.

The average price of new cars financed was \$561 for January, 1931, as compared with \$575 for January of last year, the tabulation disclosed. The average prices of used cars financed for the same periods, respectively, were \$373 and \$433.

Canadian Registrations Rise

OTTAWA, March 16—Registration of motor vehicles in Canada during the year 1930 reached the highest figure in the history of the Dominion. In spite of the abnormally low sale of new cars, total registrations amounted to 1,222,932, representing an increase over 1929 of 45,393 units. Of the total registrations 1,056,078 were passenger cars and 166,854 commercial cars.

Increases in both passenger and commercial cars were shown in eight out of the nine provinces, the exception being Saskatchewan, where an apparent decrease of 1,309 units is shown on available figures. Of all the provinces showing gains Ontario heads the list, with an increase of 22,068 registrations.

Willys of Canada Has Loss

TORONTO, March 16—Willys-Overland, Ltd., this city, felt the recession in motor car business throughout the whole of the year 1930, its annual financial report shows, and the volume of sales showed a considerable decrease. As a result, this company for the first time in years showed a net loss. It has for 1931 introduced new models, and it is believed that when a renewal of activity in motor car purchasing begins, the company will be in a good position to obtain a larger share of the business.

Lincoln Sales Increase

DETROIT, March 16—Lincoln Motor Co. has reported a steady increase in sales since the first of the year. Total retail deliveries during February were greater by 42 per cent than in January. Sales during the last 10 days of February exceed those for the first 10 days by almost 20 per cent.

Wayne Registrations Jump Above January

But Decrease 27.5 Per
Cent Below Feb., 1930

DETROIT, March 16—Registrations of passenger cars in Wayne county during February totaled 3981, an increase of 68.3 per cent over the total of 2365 for January, and a decrease of 1510 or 27.5 per cent from the total of 5491 in February 1930.

Ford registrations last month totalled 1727, or 43.4 per cent of the total February registrations in Wayne county. Ford February registrations were 45.5 per cent ahead of those for January and 46 per cent ahead of February last year. Chevrolet showed a total of 640 registrations for the month, a gain of 139 or 21.7 per cent over January figure of 501. Willys-Overland was third on the list with a total of 391 cars, accounted for by the Whippet clean-up sales which amounted to 231 for the month. Oldsmobile was fourth with 194, Buick fifth with 154 and Essex sixth with 142.

Commercial vehicle registrations for the county last month totaled 273 as compared with 257 in January, a slight increase, and with 466 in February 1930. Ford was first on the list with 186 and Chevrolet second with 37.

Howard C. Woglam

HARTFORD, CONN., March 16—Howard C. Woglam, assistant superintendent of The Pratt & Whitney Co., died at the Hartford hospital recently, following an operation for appendicitis. He had been assistant works manager of the Colt's Patent Fire Arms Mfg. Co. and had also been associated with the late B. W. M. Hanson, one of the organizers of The Han-son Whitney Co. in this city.

Wilcox-Rich Elects

DETROIT, March 16—All directors and officers were reelected at the annual meeting of the Wilcox-Rich Corp. The officers are as follows: J. O. Eaton, chairman of the board; C. I. Ochs, president; C. W. Miller, vice-president and general manager; F. A. Buchda, secretary and treasurer; E. M. Boyle, assistant treasurer, and D. G. Crawford, assistant secretary.

Eugene P. Herrman

NEW YORK, March 16—Eugene Perry Herrman, who at one time manufactured trucks under the name of Herrman Motor Truck Co., and who was also manufacturer of a number of other lines, including phonographs, radios and film-sound apparatus, died at his home here last week. He was 46 years old.

March 21, 1931

+ + CALENDAR + + OF COMING EVENTS

SHOWS

Los Angeles (Transportation) . . . March 15-28
Altoona, Pa., Automobile . . . April 15-27
International Garage Exposition, Berlin, Germany . . . May 9-Aug. 9

CONVENTIONS

American Chemical Society, Indianapolis, Ind. March 30-April 4
Washington Motor Freight Assn., Meeting, Seattle, Wash. . . April 11-13
Aeronautical Chamber of Commerce, Detroit April 11-19
S.A.E. Natl. Aeronautic Meeting, Detroit, Mich. April 15-16
Middle Atlantic Jobbers Convention, Philadelphia, Pa. April 20-21
American Welding Society Meeting, New York, N. Y. April 22-24
Natl. Battery Mfg. Assn. Convention, Niagara Falls April 24-25
Retail Delivery Assn. Convention, Washington, D. C. May 25-28
U. S. Chamber of Commerce, Atlantic City April 28-May 1
International Chamber of Commerce, Washington, D. C. May 4-9
National Foreign Trade Council, New York May 27-29
Fourth National Oil and Gas Power Meeting, A.S.M.E., Madison, Wis., June 15-18
S.A.E. Summer Meeting, White Sulphur Springs June 15-19
S.A.E. Aeronautic Meeting (in conjunction with Natl. Air Races), Cleveland, Ohio Sept. 1-3

Rubber Use Up Slightly

NEW YORK, March 16—Consumption of crude rubber in the United States during February is estimated by the Rubber Manufacturers Association at 28,797 long tons, as compared with 28,557 long tons for January. This is an increase of about 1 per cent as opposed to a usual seasonal decrease of 4 per cent at this time.

Imports during the month amounted to 36,645 long tons, as compared with 37,098 long tons for January.

Domestic stocks on hand and in transit as of Feb. 28 are estimated at 212,833 long tons, an increase of 1.6 per cent over January, and 47.9 per cent over Feb., 1930.

Foreign Trade Council to Meet

NEW YORK, March 16—The National Foreign Trade Council will hold its eighteenth national foreign trade convention at the Hotel Commodore May 27 to 29, inclusive. The subject of the convention will be The World Trade Outlook and what to do about it.

Federal Gets Award

DETROIT, March 16—The United States Court of Claims has awarded \$11,117 to the Federal Motor Truck Co. on a contract it had with the War Department for artillery tractors.

General Motors Extends Life Insurance Plan

Dealers and Their Employees
May Now Participate

NEW YORK, March 16—Extending its group life insurance policy to cover dealers and their employees, General Motors Corp. has just entered into a policy with the Metropolitan Life Insurance Co. bringing the total insurance held by the corporation under its group insurance plan well past the half-billion dollar mark, according to announcement made by Alfred P. Sloan, Jr., today. Former policies covering employees and its divisions, subsidiaries and affiliates amounted to \$347,471,000, and this new coverage makes the corporation the first holder of more than \$500,000,000 of insurance.

Under the provisions of this new plan, 19,235 dealers and their employees, a total of approximately 150,000 individuals, will be eligible for life-insurance benefits without requirement of medical examination. The amount for which the individual may apply will be graded according to his salary, the minimum being \$2000.

This contract, in addition to death benefit, carries a total and permanent disability clause providing for the payment of the policy to any participant who becomes totally and permanently disabled after participation for two years, payment to be made in equal monthly instalments.

De Vaux Adds to Plant

DETROIT, March 16—Two additional pieces of property have been acquired by the De Vaux-Hall Motors Corp. Thirty thousand square feet of property was acquired on the east side of the Grand Rapids plant to be used for testing operations, shipping loading and export boxing. An additional 9500 square feet of property was acquired by De Vaux-Hall yesterday. This site will house the engineering department, a large parts stockroom, and a division of the service department.

Hudson Sales Increase

DETROIT, March 16—Hudson Motor Car Co. has reported a 17½ per cent increase in sales for the week ending March 7 over the previous week.

"Our sales started to pick up the second week of February, and the rise over the next month has amounted to more than 20 per cent, with the week of March 7 showing the greatest gain, sales actually outrunning production by more than 200 cars. This week represented a 47 per cent gain over the same week of the previous month," the report further stated.

U. K. Tire Prices Reduced

LONDON, March 3 (by mail)—Led by Dunlop, tire manufacturers have just announced reduced prices for all types of their products, the average cut being approximately 7½ per cent. Simultaneously, gasoline prices for all grades have been reduced by two pence per gallon.

Automotive Industries